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WILDLIFE IN NORTH CAROLINA

NORTH CAROLINA Wildlife RESOURCES COMMISSION

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A fillet knife, with its razor sharp and flexible blade, makes short work of the striped bass fillets. Knives, like other tools, can be highly specialized for a particular job. **PHOTOGRAPH BY MELISSA McGAW/NCWRC.**

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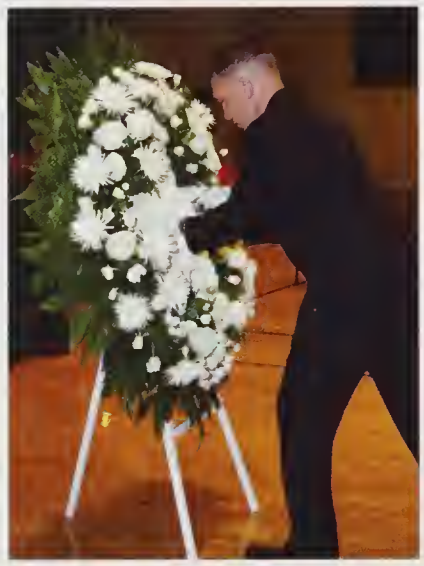
Cover: The sun rises on a successful jug fishing trip for Max Mullins, left, and Marcus Belote on Lake Gaston. PHOTOGRAPH BY MELISSA McGAW/NCWRC.

Wildlife in North Carolina is the official educational publication of the North Carolina Wildlife Resources Commission. It is dedicated to the sound conservation of North Carolina's wildlife and other interrelated natural resources and also to the environment we share with them.

EDITOR'S NOTE

David Edwards was just 8 years old when he awoke early one morning to the sound of his mother crying and news that his father had been killed in a car crash. Wildlife Officer John Edwards was returning home after a night of tracking deer poachers when he lost control of his car Aug. 3, 1965.



MELISSA McGAW/NCWRC

"I was at the age that I was going to take it like a man. I wasn't going to cry. Well, that lasted about two weeks," David Edwards recently said, recalling how a local officer convinced him that it was OK to mourn.

Edwards got a chance to mourn his father again last May, when Wildlife Resources Commission Colonel Jon Evans arranged for family of the 11 wildlife officers killed in the line of duty since 1930 to attend the North Carolina Peace Officers Memorial Day ceremony in Cary. The ceremony honored officers from law enforcement divisions across the state, including the ones who enforce hunting, fishing, trapping and boating laws and regulations. "Professionalism in the law enforcement career stays the same regardless of which agency you work for," Evans said.

So do the risks officers face on the job. One wildlife officer recently lamented that many people don't consider them "real" law enforcement officers—despite the badge on his chest and gun in his holster. While the duties of a wildlife officer differ from those of a traditional police officer—boating and hunting incidents and investigations compared to traffic enforcement and drug investigations, for example—the challenges can be no less daunting. Wildlife officers often work alone in remote areas on waterways, woodlands and fields. And, encountering people carrying guns is a daily part of their job.

"That is a common theme we hear from members of the public: 'Wow, I would be scared to do your job because everyone you encounter is carrying a gun,' " Evans said. "But honestly, most of the people that I encounter are law-abiding sportsmen, the type of people I grew up around, and I am very comfortable in that environment . . . We deal with armed people every day and it is OK for them to be armed."

As the memorial service wound to a close, North Carolina Attorney General Roy Cooper shared a conversation he had with the widow of a fallen officer. "She told me that it's not how these officers died that made them heroes, it's how they lived."

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Understanding Mattamuskeet

I read with interest the "Back Porch" news item about Habitat Enhancement for Mattamuskeet. The news item starts off with information about research involving the enhancement of submerged aquatic vegetation and water quality. Certainly these two factors are life and death matters for the thousands of waterfowl which spend the winter months at the refuge — the waterfowl for which the refuge was established many years ago. Without aquatic food sources on the refuge, the waterfowl increasingly fall prey to hunt clubs which rim the refuge with flooded fields of corn and other grains.

It is news that all sounded good for the birds until I discovered after a few paragraphs that what the "enhancement" is really all about is bass fishing. I didn't see any numerical information about aquatic plant propagation, but I did see the numbers 45,000 and 70,000 and 50,000 for bass fingerlings introduced into the lake, and of course, enhanced boat ramps. It appears to me that only the fisheries side of the wildlife commission staff are involved.

Nowhere in the news item was mention made of new plans to artificially keep lake water levels high during the summer season, a time when submerged aquatic vegetation needs shallow water to thrive, and a time when thousands of migrating shorebirds flock to the shallows and feed along the muddy shores. Nor did I see any mention of the fact that a number of well-informed biologists have registered stringent objections to the current plans for the lake, citing both reduced aquatic vegetation and reduced water quality as probable outcomes of the project.

I enjoy fishing as much as the next guy, but let's remember that the real purpose of Mattamuskeet has been and should continue to be the protection of thousands of wintering waterfowl and other migratory birds.

John Wright
Wilson, NC

[Editor's Note: N.C. Wildlife Resources Commission Executive Director Gordon Myers provided the following response regarding the Commission's involvement in the projects at Lake Mattamuskeet.]

Since 1934, Mattamuskeet National Wildlife Refuge has provided vital support to the annual life cycle needs of migratory birds, most notably the myriad waterfowl species that stopover along their annual migration. The Refuge's primary purpose has not and will not change under the recent Memorandum of Understanding between the U.S. Fish and Wildlife Service and the N.C. Wildlife Resources Commission. Instead, the agreement clearly outlines the distinct roles of the two agencies and the lands they manage. It also identifies specific programs the agencies will work on together to fulfill the purpose of the Refuge and objectives of the Comprehensive Conservation Plan.

Every year, the Refuge is visited by tens of thousands of people who enjoy a variety of compatible recreational uses, including: hunting, fishing, nature photography, wildlife viewing, boating and canoeing.

This strengthened partnership between USFWS and the NCWRC paves the way for more effective collaboration. It will allow the two agencies to co-manage more than a dozen projects to address the health of the lake's ecosystem, to identify research needs and habitat restoration opportunities, and to create facilities and infrastructure improvements for enhanced public access.

The health of Lake Mattamuskeet is of utmost importance to both agencies and to the public. The partnership is engaged in several water quality, vegetation and fishery research projects, in addition to monitoring programs that assess the current ecological health and integrity of the lake.

The partnership recently provided funds to replace water quality monitoring stations in the lake, which will provide real-time data that will be used in future lake management decisions. The partnership also paid for a research project on ecosystem enhancement, which includes submerged aquatic vegetation. This increased collaboration will help sustain both agencies' primary focus on waterfowl and other wildlife that depend upon this unique and complex ecosystem.

Gone Fishing? Me Too!

Thank you very much for the fine article, "Gone Fishing," by Terry Krautwurst (in the May/June 2016 issue). I grew up near Hendersonville in the '50s and '60s. My father, an avid fisherman, taught me to fish when I was about 6 years old. The small feeder streams in Henderson and Transylvania counties, including the streams Terry Krautwurst mentions, hold very special memories.

The author had a companion on his fishing expedition on the North Mills River watershed. I revisited, walked, explored and yes, even fished every foot of trail and every inch of stream with him as I read his article.

Thank you for taking me back to those days 60 years ago. It is wonderful to know someone shares the same love of beautiful places and those tiny brook trout and other creatures that will forever be a part of my life. Tight lines Terry!

Ed Pryor
Pittsboro

We want Your Feedback

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Here's the Catch

Jug fishing for catfish is an easy, fun way to catch a mess of fish

Written by Mike Zlotnicki
Photographed by Melissa McGaw

Max Mullins eases his deck boat, barely above idle, between two buoys on Lake Gaston during a sultry June afternoon. On the bow deck, Charlie Overton and Hunter Smith stand amid a pile of polyethylene floats, better known to many as swimming pool noodles, each about a foot-and-a-half long with a length of nylon twine, a lead weight and a circle hook attached to the business end. The day, which had started before sun up with Marcus Belote and Mullins using a cast net to catch gizzard shad in the shadows of bridge pilings, is winding toward dusk as a cooler fills with catfish.

Overton baits each hook with a piece of shad and Smith tosses the noodle, line and all, overboard. Before they could finish the pile, Belote glances behind the boat and sees a noodle skating across the surface. Mullins wheels the boat around and heads toward the float about 100 yards in the distance. Overton leans over and grabs the twine, patiently playing the fish until Belote scoops it up in an oversized landing net. Hunter's father, Dan, grabs the 10-pound blue catfish and unceremoniously drops it in a cooler. Mullins points the boat to the next dancing float and soon the process begins again.

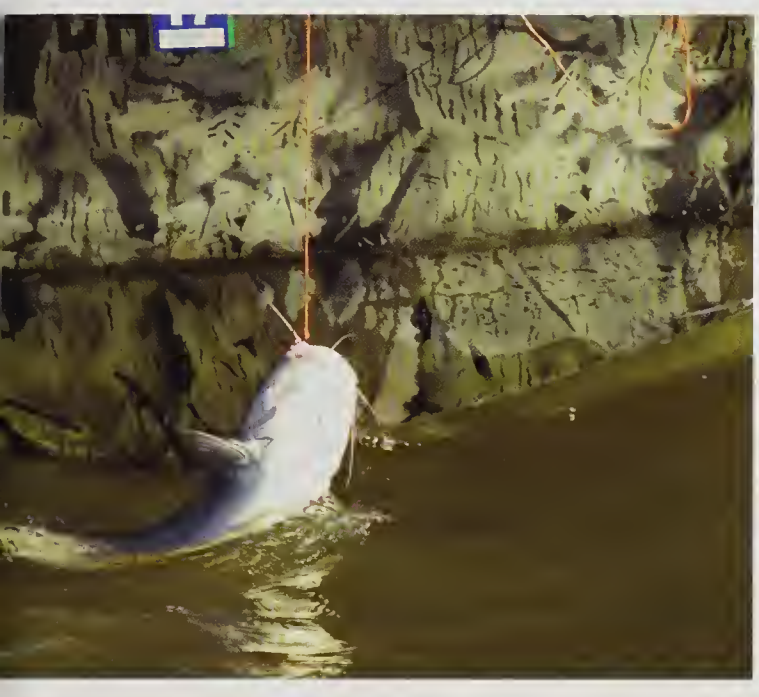
Jug fishing for catfish has been around for years but seems to be seeing a resurgence in popularity. A hobby that started with earthenware jugs evolved into plastic jugs and now is dominated by polyethylene noodles, leading many to refer to the hobby as noodling (not to

be mistaken for the pursuit of catching catfish with your hands).

"It's a pretty efficient way to catch a mess of fish," says Terry Wells, who was hosting his fellow members of Outdoors Unanimous, a Garner-based group of about 20 outdoorsmen, for a weekend of jug fishing at his Lake Gaston home. "You can go out and throw the noodles out and have plenty of fish for that night and put some in the freezer. Ever since this trip has become more about noodling, it's become more and more popular. I've been amazed at how many times I've left them out all night, came back to find nothing on them, take my wife back to the house and return to find most of them with fish on them."

Wells' catfish experience on Gaston started almost 40 years ago, when the lake was much less developed. He and his late father, George, would run trotlines across from their house, which is near the mouth of Six Pound Creek. When he started jug fishing it was with half-gallon and gallon milk jugs. He didn't begin using noodles until about three years ago.

My own introduction to jug fishing came in the mid-1990s when I edited "Carolina Adventure" magazine. I met a man and his girlfriend at Buckhorn Reservoir near Wilson, where we put out jugs, cooked steaks over a fire and collected catfish until the wee



Opposite: Floats made of polyethelene foam, the same material used for swimming pool "noodles," have become popular for jug fishing. Clockwise: An "eating-size" blue catfish is ready to be netted. Max Mullins reaches for a noodle as Marcus Belote stands ready with a net. Belote and Mullins admire this 30-pounder, caught with a gizzard shad head on a circle hook, before releasing it.

hours of the morning. I went on to make some jugs out of half-gallon milk containers with screw-on tops and had some success, but not like the success Outdoors Unanimous has had at Lake Gaston.

Overton has been pulling catfish out of lakes with these converted noodles for more than 10 years. He's been hooked on jug fishing ever since his first outing, when he and his then 10-year-old grandson caught eight catfish on 10 lines, the biggest one weighing in at 32 pounds.

"First time I went out it was like Christmas morning trying to see what was under the tree," Overton said.

Tricks of the Trade

Marcus Belote is one of those sportsmen — like most of the Outdoors Unanimous club members — who prides himself on preparation and execution, whether he's hunting bears and ducks in Hyde County or catfish at Gaston. He's been jug fishing for about seven years after seeing it done on an outdoors television show. He and Mullins have since come up with a blueprint for jug fishing success.

"In the morning before the sun comes up, we normally catch shad around bridges and riprap," he says. "Then, we put it on ice. The bait sits on a strainer with ice on top so the water drips through and the shad don't sit in water and get soggy."

Belote and Mullins use commercially-made noodle jugs like the Little Stinker Pop-Up Fish-a-Noodle or Rod-N-Bobb's Fish'n Noodle. Each unit has 12 to 14 feet of line with a half-ounce weight about one foot above an 8/0 to 10/0 circle hook. They prefer to deploy their noodles in close proximity to each other.

"I want to be able to see them all and it concentrates the scent of the bait in one area," Belote says. "One thing we do different with our jugs is we use bow fishing line (nylon twine). It doesn't tear up your hands like braid does."

Shad is the bait of choice on big reservoirs because blue cats feed on them. Overton says that crappie heads are also one of his top baits and he's used

Part of the allure of jug fishing, and one reason Marcus Belote (left) and Max Mullins are drawn to Lake Gaston, is the simple anticipation of what's on the other end of the line. It can be a 3-pounder or, in this case, a 30-pound catfish.

leftover ham rind with good results. Wells says that chicken livers and gizzards work well for him. Shad can be caught in nets but panfish must be caught on hook and line if they are going to be used for bait.

Belote is drawn to jug fishing for many of the same reasons as his fellow club members.

"We like doing it because you are going to catch an abundance of fish," he says. "We don't really go after the big ones, we're there to go after the eaters. Five to 10 pounds is ideal. It's simple. You can do it with beginners and children. And you never know what you're going to get. Could be 5 pounds, could be 50, could be 80. There's no telling what's on the end of it."

Fish Tales

Overton hasn't let too many catfish escape his grasp during his decade of jug fishing, literally hand-lining in hundreds at various bodies of water throughout North Carolina. But like with most outdoor endeavors, the ones that got away can make for the best stories, and Overton has a doozy of a fish tale, complete with video from a cellphone that serves as an aquatic sasquatch sighting.

A few years ago, Overton and his buddy Bill Williams were finishing up a jug fishing trip on Gaston and were on their way back to the dock when their friend, Bob Wright, pulled alongside in his bass boat and pointed out a missing noodle with a catfish on the line. Overton tracked it down and began pulling up the line — and that's when things got interesting.

"I got the line in my hands and played him for a minute, but then he made a big lunge and pulled it out of my hands and we could not catch back up with it when it went under the water," said Overton, a natural story teller who recalls the experience with a twinkle in his eye. "It was just like that barrel in "Jaws." It stayed under for 10 minutes. That's the only time it's happened to me."

Eventually, again with Wright's assistance, they tracked down the noodle, and Overton began fighting with it again.

"We had two nets," Overton says. "My philosophy was to use two nets, one on each end and get him on the boat like that. Bill wanted to use one net. We finally got the fish on the front of the pontoon boat and it was 6-to-7 foot long, like a baby calf it was so big. Absolutely. We figured a good 100 pounds."

And what happened next? It slipped off the boat deck and got away.

Good Eating

The weekend haul of catfish ends up being about 40 blue cats between 5 and 20 pounds. Anything smaller or larger was returned to the water. Some fish are dressed out and cooked that Friday night in peanut oil, along with hushpuppies and fries. The rest are filleted, bagged and put on ice for vacuum packing later.

Bill Williams is tapped as chef du jour. While waiting for his oil to heat in a propane fish fryer, he talks about preparing and cooking the cats.

"First of all, you have to dress the catfish. I use an electric fillet knife to cut the fillet and then a regular fillet knife to cut the skin off," Williams says. "Then I wash the fillets off in ice water, which cleans them and keeps them firm. I like to cut them into chunks the size of a chicken nugget and also to cut off the excess red meat that occurs next to the skin. It can impart a bit of a muddy flavor."

After cutting into 1-inch-by-2-inch chunks, Williams rolls the chunks in yellow cornmeal. Sometimes, he'll use a commercial seafood breader. Normally he simply salts and peppers the chunks and rolls them in the fine-ground yellow cornmeal.

"Then I cook them in canola or peanut oil — peanut is preferable — at about 375 degrees. Peanut holds a better heat value," he says. "With canola you go about 350 degrees. You want the fillet slightly damp so the cornmeal will stick to it. Some people use milk and do a double dredge and get a heavy coating on it, but I prefer a simple light coating of cornmeal.

"It's ideal with a cold beverage, either alcohol or non-alcohol. Also goes well with some good slaw and some good homemade recipe hushpuppies. Normally we include french fries with it and make the meal as unhealthy as possible," he adds with a chuckle.

These same catfish fillets are also excellent on the grill or broiled with some lemon pepper or Greek seasoning.

Jug fishing is a pretty pedestrian form of angling, but pretty effective when harvest precludes pure sport. Not as haughty as fly-fishing for trout or as brazen as pounding the bank for bass, but more a means to an end. It's easy, cheap and sociable, a summer angling opportunity when sweat is optional. And, at the end of the day, just make sure your grease is hot. ◆

Mike Zlotnicki is the associate editor of Wildlife in North Carolina. *He may be reached at 919-707-0175 or mike.zlotnicki@ncwildlife.org.*

HOW TO TAKE A *Kid Fishing*

BY F. EUGENE HESTER

Don't leave a first fishing experience to chance. Careful preparation can make the difference between a great adventure and a disappointment.

Kids enjoy outdoor activities and fishing can become one of their favorites. But there are important things to consider before the outing. Make that first experience a memorable one and start a lifetime of excitement.

HERE IS HOW TO *Make it Happen:*

01 SCOUT THE AREA

SCOUT THE AREA TO DETERMINE FISH ARE THERE AND LIKELY TO BE CAUGHT. THROWING BREAD CRUMBS WILL LIKELY REVEAL IF BLUEGILLS OR OTHER FISH ARE PRESENT AND READY FOR FISHING.

02 SIMPLIFY EQUIPMENT

A SHORT POLE WITH LINE, A BOBBER AND HOOK WORKS FINE. I ONCE SAW KIDS FISHING WITH ONLY A STICK, STRING AND BENT SAFETY PIN HAVING A GREAT TIME CATCHING SMALL BLUEGILLS. EXPENSIVE EQUIPMENT IS NOT REQUIRED.

03 RAPID ACTION

ACTION IS IMPORTANT, AND IS MORE EXCITING THAN THE SIZE OF THE FISH. RAPID ACTION MAINTAINS INTEREST AND EXCITEMENT FOR KIDS.

04 LET THE KID CATCH

LET THE KID CATCH OR HANDLE THE BAIT. HE IS LIKELY TO BE EXCITED BY LIVE AND SQUIRMING MINNOWS, GRASSHOPPERS, CRICKETS OR EARTHWORMS. CATCHING THEM CAN BE HALF THE FUN AND MIGHT BE AS EXCITING AS CATCHING THE FISH.

05 FOCUS ON THE KID

MAKE THE TRIP FOR THE KID, NOT JUST HAVING HER ALONG FOR YOUR TRIP. SHE NEEDS ATTENTION, ENCOURAGEMENT AND ASSISTANCE. YOU MIGHT HAVE TO BAIT THE HOOK OR TAKE THE FISH OFF THE HOOK.

06 *Bring Snacks*

TAKE ALONG SOME ***SNACKS—CRACKERS, COOKIES*** AND A ***DRINK.***

07 BRING DISTRACTIONS

TAKE A BUCKET OF ROCKS. IF ACTION IS TOO SLOW, LET HIM THROW ROCKS IN THE WATER. EVERY KID ENJOYS THAT AND FINDS IT EXCITING.

08 *Take Pictures*

TAKE PICTURES OF THE KID WITH HER FISH AND SEND HER PHOTOS OF BOTH ***CATCHING*** THE BAIT AND THE FISH.

09 MAKE MEMORIES

PLACE THE FISH ON A PIECE OF STIFF PAPER OR CARDBOARD AND TRACE IT WITH A PENCIL OR PEN. DO THIS WHILE THE FISH HAS ITS FINS ERECT, AND LATER SKETCH ITS EYES AND GILL COVER. WRITE THE KID'S NAME AND DATE ON IT AND GIVE IT TO THE KID TO TAKE HOME.

10 TAKE SOME HOME

IF THE PARENTS AGREE, CLEAN SOME OF THE FISH FOR THE KID TO TAKE HOME SO HE CAN EAT SOME OF WHAT HE CAUGHT. SUCH A TRIP REQUIRES EXTRA EFFORT, BUT IT CAN RESULT IN MORE THAN A SUCCESSFUL FISHING TRIP. IT JUST MIGHT INSPIRE A KID TO BECOME YOUR LIFETIME FISHING COMPANION.

Hunting for an Answer

WRITTEN BY CHET CLARK & ILLUSTRATED BY TIM LEE

One Man Searches to Understand His Calling

There are those of us who do without much thought of why and those of us who search for the why to validate the doing. This is my search.

It is a personal search for personal reasons. I don't intend to validate for the masses. I intend to validate the aching yearning I've had tugging at my soul since the days of remembrance began so long ago. I search for why nothing else can compare, nothing else can be substituted, nothing else will do.

I search to understand why the smell of a hunt is transcendent yet ephemeral. I don't suppose those who don't hunt would understand that, but those who do fully comprehend this desire.

The scent of fresh-cut grass may give those who don't share my passion an inkling into what I mean by the smell of the hunt, but compare it does not. Before I go further, however, I must clarify that I have much love and admiration for family and they are the roots that feed my enthusiasm for life and allow me to grow adventurously outward and upward.

The hunt is altogether different. It's a calling that I don't seem to have a choice but to answer. It's a drawing to, that on one hand is odd and controversial but on the other hand is as natural, freeing and pure as the headwaters of an Appalachian stream. Just as that stream seems to search continuously—although not always ardently—for the sea, my search has taken on similar progressions.

Every hunter must be willing to kill. Without that fundamental element, the name of the pursuit is hiking. The kill, however, isn't what it's ultimately about, nor does it have to happen every outing. It is unquestionably the center tent pole, but it does not confine me. I, as a hunter, am infinitely more than a killer.

The end result may put the focus on killing to those who do not understand. However, there's more to it. The comprehension of the more is the barrier that keeps most hunters reserved when it comes to expressing feelings about why we hunt. We, myself included, have used many of the same bullet points that speak for hunting's justification: wildlife management tool, funding for conservation projects, food for the table, heritage and personal choice.

These are all valid points that contend for the need of hunting and hunters. These points must continue to be learned about, expanded upon and shared. They provide me with great talking points when speaking to others about the importance of hunting to wildlife populations, habitat conservation, organic food sources and a healthy mind, body and soul. As valid as these tenets seem to me and others, that's not the "why" that I'm after. I'm after the meaning: What drives me to hunt?

To be a hunter, it would seem, is to partake in a life-long lesson of history. It's written in our genetic code, in the forest around us, in the game we pursue and in the methods and tools we employ during the pursuit. Hunting is literally engrained in us all. The odds that I (or anyone) am even here at this point in time are astounding. The millions (or more) of events involving my ancestors that had to come together to get me to be are miraculous. They were excellent hunters—my ancestors that is—or they wouldn't have survived long enough to mature, find a mate, reproduce and provide for a family. All of them, up until relatively recently, fit this description. I have no doubt that the recent family members would have done fine without mass-produced food as well, but I'll never know for sure.

So, is it history that does the tugging at my soul? It does seem to fit the bill. The fact that I come from generation upon generation of great hunters has to carry some weight in this search. But is it deeper than that? Does it speak more closely to the animal side of us? Does my inexplicable yearning for the hunt originate from my animalistic beginnings? I believe it may.

There is a feeling of belonging when I hunt, a feeling of homecoming. The hunt places me in the brutal, unforgiving,

unapologetic, yet beautifully precious and fragile world of nature to which I am very much a part of. Not just because I'm in it at that moment, but because I am it. I am nature. I am an animal, albeit an animal who specializes in making and using fantastic tools, but a member of the animal kingdom all the same.

By hunting, I leave the developed world and enter a historical one. Though I use modern methods and tools in my pursuit of prey, I'm still unsuccessful more times than not. Although success in this instance means food for the family, it does not mean the hunt failed. Success is the being, it's the history lesson. It's the musings of the past. It's the moment that I look down and see my grandfather's name on a label affixed to my rifle. He died before we ever met, but the history lives on. It's the old remnant road cut into the ridge side that I ponder its origins and purpose and how many hunters walked it before me. My grandfather likely did while holding the same rifle that I do. It's the thoughts of why I'm sitting and calling a spring gobbler instead of buying one. It's the history. That is the success.

The hunt places me in the brutal, unforgiving, unapologetic, yet beautifully precious and fragile world of nature to which I am very much a part of.

Although success isn't measured by meat in the game vest, I do have a great love of the table fare that comes from my history lessons. I long for the smells of autumn to return, not only for the health of my mental state but for the reward to my palate when my freezer becomes devoid of wild game meat. This is but another part of my puzzle.

I immensely enjoy the fruits of the hunt. It is a reward for a great adventure. Those adventures, fed by my curiosity, take me far—sometimes extremely so. I know that the next ridge will be the spot. The historical drive pushes me to explore and search. Instincts take me to the food. I don't fully understand it, but I do seem to have a food drive when I hunt, which I suppose makes sense.

I inherited genes that are needed to hunt for food to survive. But why—with cheaper, mass-produced, easily available food sources all around me—do I continue to be driven to hunt? I spend money to hunt. I spend lots of time hunting and preparing to hunt. I exhaust my energy getting the game back to the freezer in meal-sized portions. I do it all myself. Satisfying? Yes. Easy? No.

In this day of convenience and comfort at any cost, why do I continue to hunt? Free-range, organic food is available. I could utilize that. Do I have a nostalgic wish for times gone by? Perhaps. But I suspect it's more along the lines of wanting or needing to be self-reliant. I often look at modernity with eyes of contempt. Although it has made life very comfortable, it has also brought about dependence bordering on disease. I fancy myself as part of the cure.

The meals provided from my history lessons are very rewarding and satisfying, but what of the land? I myself have told those who would listen that I hunt partly for the interaction with the land. Being immersed in the habitat of my quarry is like going home. The land I hunt is varied, from swamp to farmland to ridge and valley. It all holds a special place within my hunter's soul, but as with anyone who hunts, I have a favorite.

That land as it were is special, magical. It holds a mystique that would rival the greatest of hemlock stands. I learned how to hunt there, practiced how and continue to return to it for the gifts and lessons it so assuredly provides. As with that land, all land that's hunted seems to take on a companion-like state. Only a hunter, I suppose, can understand this sort of love affair with a piece of land. Others will no doubt have love for land, but there are different degrees of love. This hunter's love for the grounds that taught him about nature, life and death are hallowed.

The land gives in a multitude of ways, and its continuance, its conservation, is a core value of me and many as hunters. As it should be for all, hunter or not. To lose those pieces of our being or have them altered beyond repair is blasphemy. Perhaps this flies in the face of what some think about hunters and hunting. But, hunting isn't about being wasteful or extirpating resources. Regulated hunting, in fact, has never caused the extinction of any species.

We the people, and our need for "development" have done far more damage than regulated hunting ever will. Perhaps thinking like a hunter would be beneficial to us all. Maybe it's time for the 13-to-15 million of us who hunt to do more searching within ourselves and find our own meaning. It's time for us to learn from our experiences and pass it on. It's time to open conversations about the hunt and the hunter and speak from the soul.

I believe the next generation of hunters will look at hunting with a new perspective and they will search for meaning. They will bring meaning. We all live below those Appalachian headwaters, we all want the same things. We all need aesthetic beauty from nature, though we may utilize it differently. I as a hunter and someone else as a non-hunter merely differ in our strength of connection to hunting's past.

I don't ever remember a time when hunting wasn't an integral part of my life. I grew up in a hunting family, surrounded by hunters who were immediate family, extended family and most of my friends. Although I don't believe that is why I hunt, I do think it helped bring out the hunter in me—just as I hope for my hunting to bring out the hunter in my children.

But, as much as hunting is who I am, it's not the only thing I am. Nature and its conservation carry as much or more weight with me as hunting does. For without the former I can't have the latter. Education of nature and its systems, habitats and inhabitants are vital to us all. After all, we are one of its inhabitants and the more we know the better tenants, stewards and hunters we become.

Though I need the outdoors, its beauty and what it has to offer, hunting has always been the driving force in my mental well-being. I am not myself without the opportunity to hunt. I don't hunt for fun, although I enjoy it very much. It's not a hobby for me. It's not about recreating or spending time with friends and family. I do enjoy to hunt with them, my dad especially, but I hunt alone much more than with companions.

I don't feel as though I ever consciously made a decision to become a hunter; I've just always been one. I hunt because I have to. I hunt because it's who I am. I hunt because it's what I am. I am a hunter. It's at my core and in my soul. It is my passion, my desire, my being. It's emotional. It's visceral.

When the adventure of the hunt is calling, I must answer it. I must search and listen for the next history lesson. I must search for my next meal. I must go. I have to.

Chet Clark is the Eastern outreach supervisor in the Wildlife Education Division of the Wildlife Resources Commission.

WAYNE DAVIS/OCEANAERIALS.COM

BLUEFIN TUNA

THE SUPERLATIVE FISH

They swim the world's oceans powered by the strongest muscles of any species of fish. Throughout their lifespan, which can be as long as 30 years, they roam entire ocean basins. They have the longest known migration of any fish. They are among the largest species of bony fish, reaching weights of nearly 1,500 pounds and lengths of over 14 feet. Seemingly more mammal than fish, their core body temperature can be regulated to as much as 30 degrees above the surrounding water, allowing them to swim in near-frigid ocean waters. Their large, warm-blooded muscles make them among the fastest creatures in the sea, powering them to speeds of 50 mph through the water. They can dive to nearly three-quarters of a mile below the ocean's surface.

They have been desired, revered and persecuted by mankind for millennia. Countless books, scientific papers, newspaper articles and magazine stories have been written about them. Few creatures, living or dead, have had so many superlatives lavished upon them—and deservedly so. For the bluefin tuna is, quite possibly, the most extraordinary fish swimming the world's oceans. It is also one of the most mysterious and, sadly, among the most endangered.

This unique, powerful fish is also among the ocean's most endangered

Most North Carolinians used to reeling in largemouth bass from small farm ponds on lightweight rods and reels really have no concept of how large bluefin tuna can grow. Five pounds is considered a large fish in most parts of the state. A fish the size of a small car boggles the mind. No matter how many old photographs you have seen of fishermen standing next to dead tuna strung up by their tails at an old wharf, or how much you enjoy

WRITTEN BY TODD PUSSER

A cast of the former state record bluefin, weighing 805 pounds, hangs at the entrance to Oregon Inlet Fishing Center. The record was eclipsed in 2015 when a 1,005-pound bluefin was landed off Morehead City. Below: A bluefin tuna is processed at the dock on the Outer Banks. Raw tuna meat, known as sashimi, is highly prized in Japan.

watching fishing shows like "Wicked Tuna," nothing compares to being physically close to an animal the size of a 1,000-pound bluefin. My most memorable encounter with giant bluefin happened years ago in the middle of the Atlantic, in the deep, azure-blue waters surrounding Sao Miguel Island in the Azores. From a small boat, we approached a large group of common dolphins feeding on an enormous school of fish. The dolphins had worked the fish, sardines, into an enormous swirling mass, concentrated just below the surface of the water. The dolphins charged through the baitball from all sides as hundreds of Cory's shearwaters, a pelagic seabird that breeds in the Azores, attacked the school from above. The smell of fish oil hung heavy in the air.

Suddenly, amongst all this frenetic action and without any warning, a massive bluefin tuna launched into the air from within the heart of the baitball. Fish and birds scattered. The tuna, dwarfing the nearby dolphins, seemed to hang in the air for an eternity, hovering above the waves. The encounter actually lasted a mere fraction of a second, but the image of that massive tuna, metallic steel blue in color with pectoral fins flared out from the sides of its body like the wings of an airplane, has been permanently etched into my memory. Thinking back on that extraordinary encounter, I am reminded of the great author and sport fisherman Ernest Hemingway's declaration of bluefin tuna as "the king of all fish."

World's Most Expensive Fish Dinner

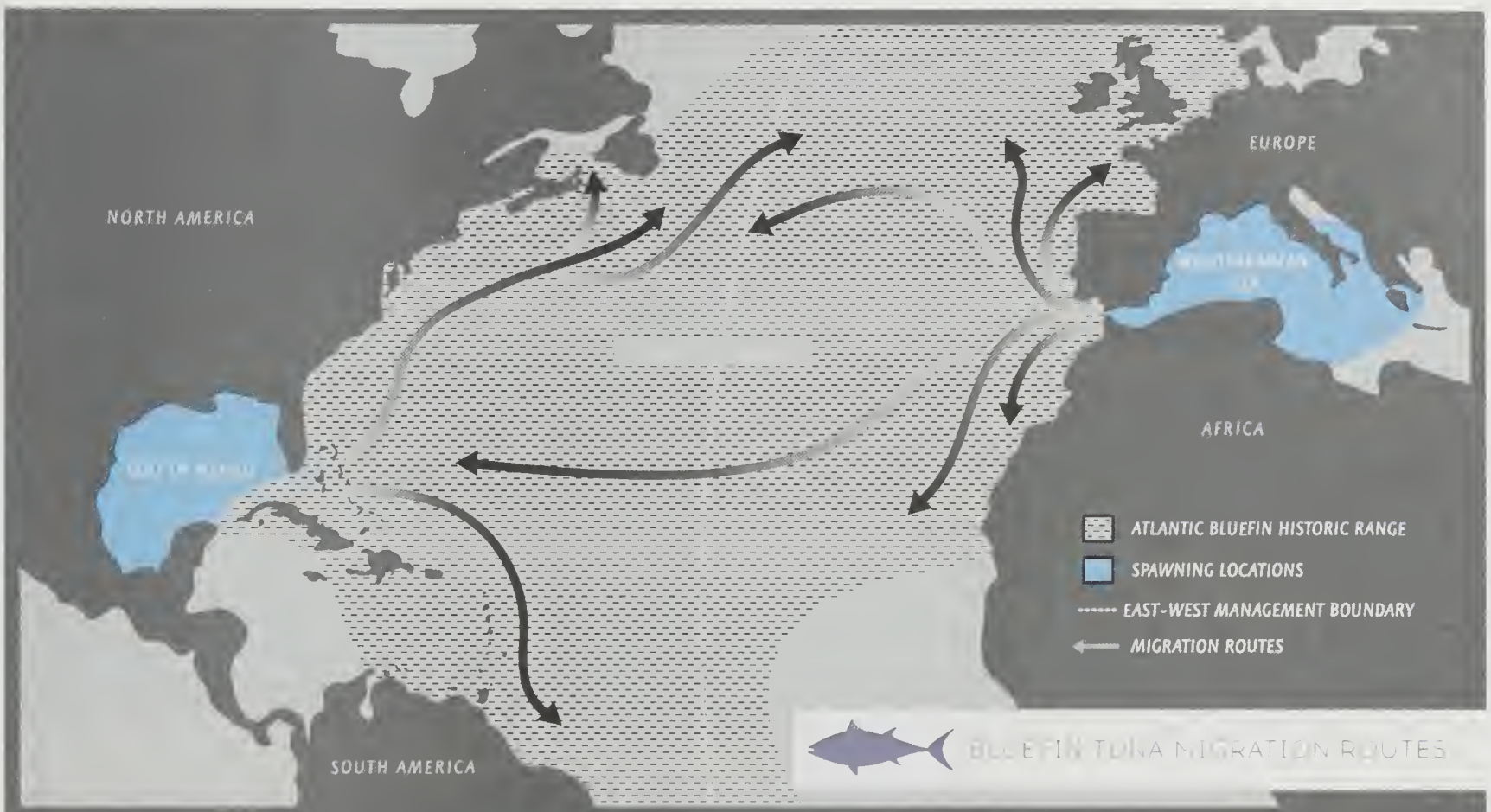
Commercial and sport fishermen aside, the closest most Americans get to any species of tuna is ordering a $5 foot-long sub. That tuna flesh is so tasty and nutritious—most species are high in heart-healthy Omega-3 fatty acids—has made them targets for commercial fisheries across the globe. Skipjack tuna, yellowfin tuna and albacore tuna are hauled in by the millions each year to satisfy the increasing demand for seafood by the world's ever-growing human population.

Bluefin tuna have been fished for thousands of years in waters off Japan and the Pacific Northwest. Aristotle and Pliny wrote of bluefin tuna corralled along the shores of the Mediterranean into man-made underwater mazes consisting of miles of rope, weights and netting fastened to the seafloor. Some of these "tuna traps" are still in use off the island of Favignana in Italy.

There are eight species of tuna in the genus Thunnus, of which three are bluefins — the Atlantic, Pacific and Southern. The Latin name for the Atlantic bluefin tuna, *Thunnus thynnus,* was assigned to the species in 1758 by the father of modern zoological taxonomy, Carl Linnaeus. One gets a sense of the reverence Linnaeus held for the fish when translating the binomial name, which means "the tuna of tunas."

In January 2013, a bluefin tuna weighing 489 pounds made international headlines when it sold for a staggering $1.76 million at the world's largest fish market in Tokyo. Breaking out the calculator shows that this one fish sold for $3,600 per pound. Stop and think about that for a second. Not many things sell for those prices. The things that do are either very rare or very illegal. The reason such an absurd amount was paid for a single fish was due, in large part, to an annual Japanese tradition that celebrates good fortune in the New Year and, of course, for the publicity such a purchase would create.

Much of the global catch of bluefin tuna is shipped to Japan, a country that has fished the species for thousands of years but whose appetite for them increased significantly after World War II. By some figures, Japan's population consumes over 90 percent of the bluefin tuna caught anywhere in the world. Fish caught in Spain, or pulled from the cold, nutrient-rich waters of Canada, or from seas off Australia, are flash frozen and shipped overnight to fish markets in Japan in an effort to satisfy the country's appetite for raw tuna meat known as sashimi.



Source: pewtrust.org, tuna migration

Prior to the Tag-a-Giant program, scientists thought Atlantic bluefin tuna were two separate stocks, one group that spawned in the Gulf of Mexico and an eastern group that spawned in the Mediterranean Sea. The two populations actually share feeding grounds.

It is hard to believe now, with all the attention focused on the value of a single bluefin tuna, that not long ago, Atlantic bluefin was considered a trash fish by many North American fishermen. According to the 1995 book, "Giant Bluefin" by Douglas Whynott, fishermen in Cape Cod during the 1950s and '60s were selling bluefin tuna for 5 cents a pound. Fishermen slandered the fish, referring to bluefins as "horse mackerel," whose meat was only good for feeding cats and dogs. In just 50 years, bluefin tuna went from being pet food to the most valuable fish on earth. Today in Japan, mid-sized bluefin tuna regularly sell for between $10,000 and $20,000. With those sorts of prices, it is no wonder that the species is among the most overfished on Earth, whose population by recent scientific analysis has declined by well over 60 percent along the western side of the Atlantic.

A Fish with All of the Upgrades

Bluefin tuna—along with swordfish, great white sharks and mako sharks—have the unique ability to thermoregulate their core body temperature. Like mammals, they are warm-blooded. They have achieved this incredible feat of physiology through a combination of anatomical modifications. Bluefins have the largest gill surfaces of any species of fish.

Unlike sea bass or grouper, which can hover in one spot in the water column by gulping sea water into their mouths and over their gills, bluefin tuna must constantly keep swimming or they will die. They have a specialized system of intermingled veins and arteries, which, along with high hemoglobin concentrations, act as an advanced heat exchanger in the fish's core. This enables their large red muscles to function at very efficient levels, allowing for maximum outburst of power. A few modest flicks of their tail and bluefin tuna can accelerate faster than a cheetah, easily overtaking their prey. Couple this fact with large eyes, warm brains and immense size, and you have the most advanced fish swimming the world's oceans today.

Mid-sized bluefin tuna regularly sell for between $10,000 and $20,000. With those sorts of prices, it is no wonder that the species is among the most overfished.

A bluefin caught off of North Carolina or Canada may have come from the Mediterranean Sea, or vice versa.

Carolina Bluefins

In the mid-1990s, concentrations of bluefin tuna were found by fishermen in waters off the Outer Banks. Whether the fish used this region before that time and were simply overlooked is not entirely known. Recreational fishermen, by some accounts, were reeling in dozens of tuna each day during the height of the season, which typically lasted from December through March. Scientists took notice of the great fish swarming off our beaches as well and developed a unique cooperative program with fishermen known as Tag-A-Giant. This innovative and progressive research program allowed anglers to pay a fee for the privilege of reeling in a giant tuna. The money helped to sponsor a sophisticated satellite tag which was attached to the body of any bluefin caught. The tuna was then released alive back into the sea.

Two types of satellite tags were deployed on the fish off of our coast. The first was called a pop-up satellite tag (PAT), which was attached to the outside of the tuna via a barbed hook. Pop-ups are programmable to come off of the fish at a certain time. When the tag releases from the tuna, which can be anywhere from a few days to a year, it floats to the surface of the ocean and transmits its data to an orbiting satellite. Scientists then log onto the satellite and retrieve highly detailed information, such as the temperature of the water the fish was swimming in, the depths to which the fish dove and the estimated latitude and longitude of where the fish traveled (by calculating ambient light levels).

A second archival satellite tag (TAG) was also used. TAGs were implanted inside the body of the tuna with an antenna sticking out from the side of the body. These tags record similar data to the pop-ups, but being embedded inside the body cavity allows researchers to better monitor the physiology of the fish. And the tags can record data for several years. There was one caveat, however, with using TAGs; the tuna had to be recaptured in order to obtain the data. The Tag-A-Giant team offered monetary rewards to entice fishermen who caught a tagged bluefin, anywhere in the Atlantic, to return the valuable satellite tags.

A quick glance at Tag-A-Giant's website (www.tagagiant.org) shows that over 900 satellite tags (683 TAGs and 251 PATs) were placed on bluefin tuna over a 13-year period off the North Carolina coast. This level of technology had never been applied to the species before and the results from the program are astounding. Prior to the development of these satellite tags, scientists believed there were two distinct populations

of bluefin tuna roaming the entire North Atlantic Ocean, one that occupied a region off the eastern shore of North America and spawned in the Gulf of Mexico and another that swam in the eastern Atlantic and spawned in the Mediterranean Sea.

The Tag-A-Giant program, through the use of its advanced satellite tags, seemed to support that hypothesis. However, the data also revealed, when compared with other tagged bluefins caught across their range, that the two populations freely mixed on productive feeding grounds — such as off the Outer Banks and the Flemish Cap (an area of ocean off Nova Scotia made famous by the book and movie "The Perfect Storm"). A map on their website reveals the extraordinary movements over a four-year period of a bluefin tuna tagged off North Carolina in 1999. That fish stayed in the western Atlantic for over a year before moving across the entire Atlantic Ocean basin to the Mediterranean to spawn and spend its next three years of life before being captured once again.

This poses some interesting challenges for the International Commission for the Conservation of Atlantic Tunas (ICCAT), which manages the fisheries for Atlantic bluefin tuna. For decades, this governing body of fishing quotas managed the eastern and western populations of Atlantic bluefin as separate stocks. A dividing line drawn roughly through the center of the Atlantic was the Commission's rationale for separating the tuna into two distinctly managed populations. The Tag-A-Giant's satellite tag program has clearly shown that is not the case. A bluefin caught off of North Carolina or Canada may have come from the Mediterranean Sea, or vice versa.

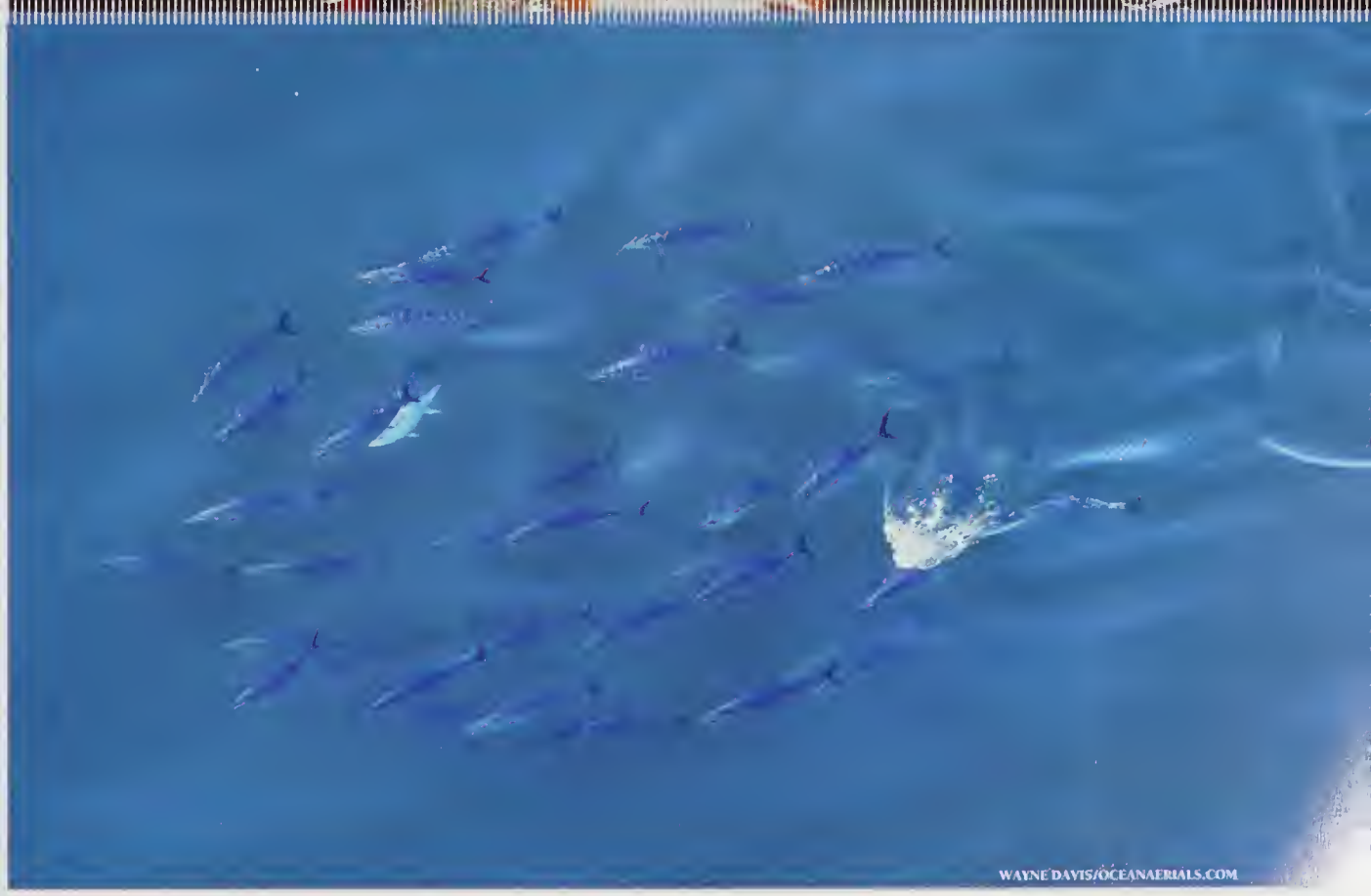
The politics of tuna are hotly contested. There will always be disagreement over the management of fishing quotas by fishermen, scientists and conservationists. If the bluefin tuna is to persist into the 22nd Century, it is going to take the combined efforts of all these factions to reach some common ground. Perhaps Matt Rigney, author of the immensely readable book "In Pursuit of Giants," summed it up best by stating:

"We must move away from thinking of other life forms as 'resources' and consider that they are not merely to be used for our entertainment, nourishment, or other benefit, but that they are, indeed, cohabitants of this planet — a planet we do not own but we have privilege of inhabiting, as well as the real responsibility of protecting."

A creature as spectacular as the bluefin tuna deserves nothing less.

Todd Pusser is a marine biologist and a frequent contributor of stories and photographs to Wildlife in North Carolina.

Tunas are sold for top dollar at fish markets around the globe, with bluefins commanding the highest prices. Below and opposite page: When viewed from the air, squadrons of giant bluefin tuna provide a breathtaking spectacle. Schools such as this are commonly seen off our coast in late winter and early spring.



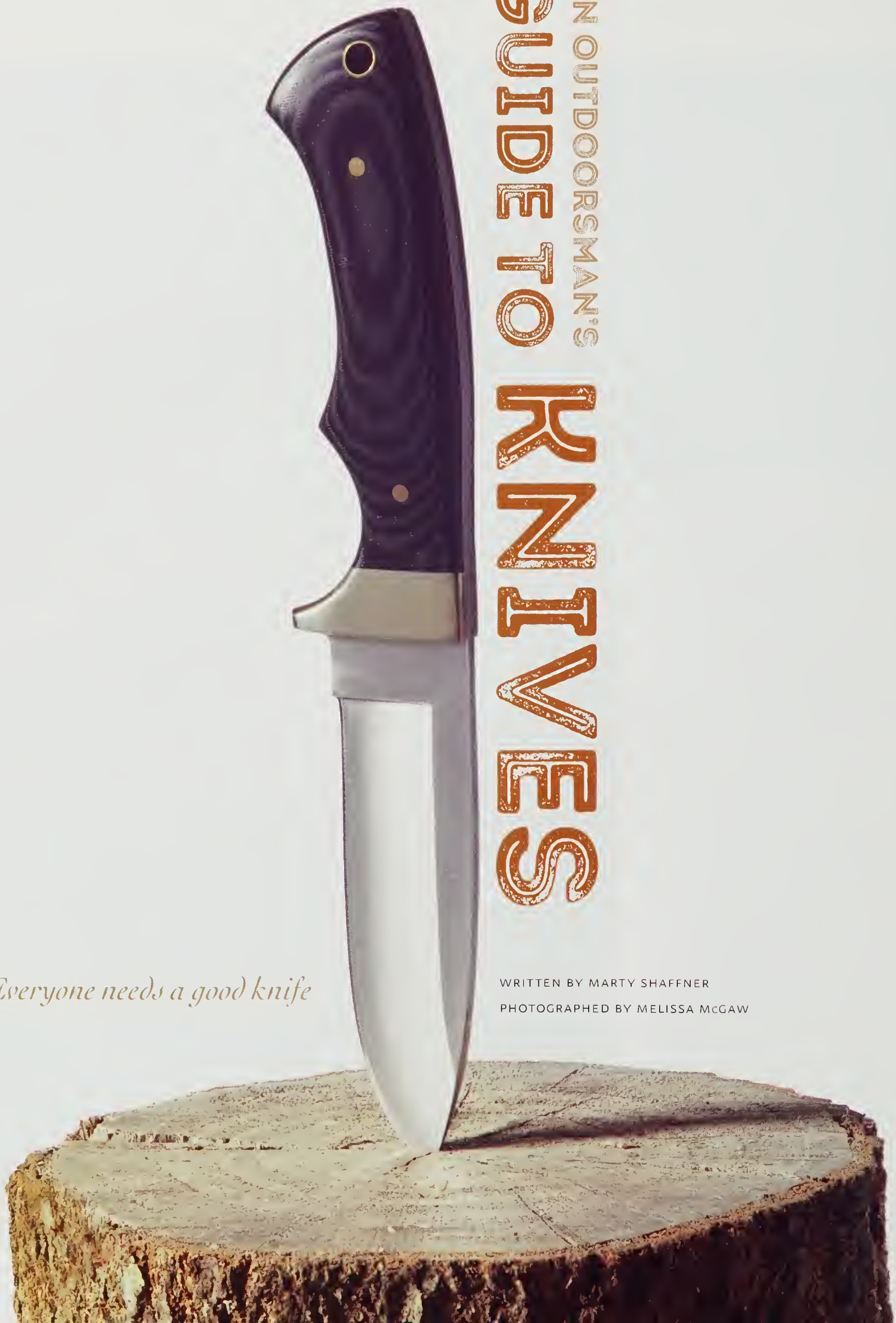
AN OUTDOORSMAN'S

GUIDE TO KNIVES

Everyone needs a good knife

WRITTEN BY MARTY SHAFFNER

PHOTOGRAPHED BY MELISSA McGAW

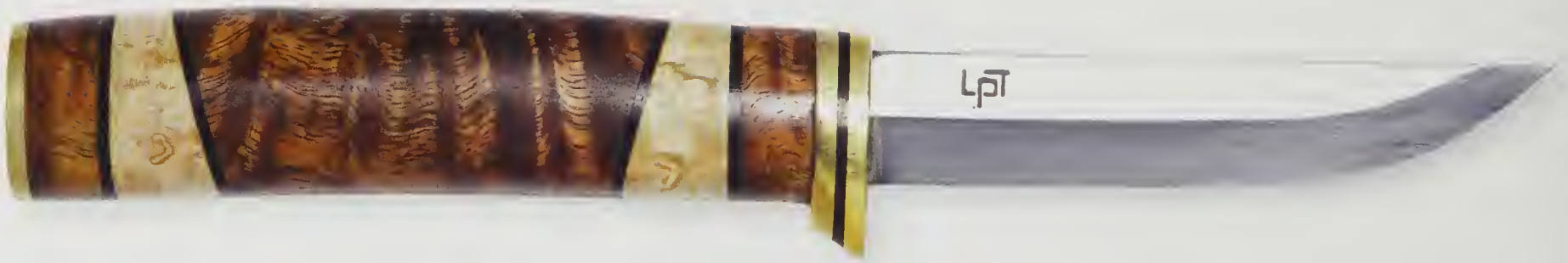


Any man worth his salt carried a knife in his pocket when I was growing up— in fact, even a lot of ladies kept one tucked in their pocketbooks. Most boys had a pocket knife as well and, God forbid, even carried it to school. Knives seemed to be as common as pencils.

I carried a Case XX Sodbuster folding hunting knife in a leather holster on my side as I walked the halls of my high school. I have always had a love for knives and believe every outdoorsman should carry a quality knife, and it should be sharp. I still never leave home without a knife and a day doesn't go by that I use my knife in some way. It is the one piece of equipment I carry whether hunting, fishing or working.

A knife is handy for skinning and processing game, cleaning fish, shaving some kindling for starting a fire, extracting a splinter, opening a package, sharpening a pencil and all kinds of other everyday tasks. A knife can even save your life if you ever get in a serious, unexpected situation. Knives can also be a work of art. To me, a quality-made knife with a beautiful handle of stag (or some type of antler), bone or wood is a thing of beauty.

Opposite: Among the most common accessories for hunters are drop-point fixed-blade knives, the preferred choice for skinning or heavy-duty jobs around a campsite. Folding pocket knives are handy tools for smaller jobs.



Like when buying your first car or a family dog, knowing what you're looking for before purchasing a knife is a must to avoid buyer's remorse. There are a few golden rules when buying, and then owning, a knife. These include:

- A dull knife is almost as bad as not having a knife. A sharp knife, if you treat it with respect, is safer than a dull one.
- All knives are not created equal, even if they are made of the same type of steel.
- A lot of good-looking knives aren't good at all. Stay away from ones made in China or Pakistan. Instead, look for something made in Germany, the United States or a Scandinavian country. Most knives manufactured in these countries are quality and will give you a lifetime of service.
- You get what you pay for. Be suspicious of a knife that costs $5 to $25, although a knowledgeable shopper can sometimes find a bargain in a used knife.

A dull knife is almost as bad as not having a knife. A sharp knife, if you treat it with respect, is safer than a dull one.

Knives come in several varieties, including folding, fixed blade and multi-tools—which incorporates knife blades with tools. Each has a place in the outdoors and has strengths and weaknesses. Let's take a look.

IN THE FOLD

Folding knives feature blades that fold into their handles (thus the name). These usually fall into two categories: pocket and folding hunters. Folding knives can feature a locking blade (or blades), one or multiple blades and several different styles of handle shapes and materials.

Personal preference certainly impacts a purchase. I prefer a pocket knife with two blades, because if one gets dull there is another blade to fall back on. I also prefer a knife with stag or bone handles purely for aesthetic purposes. I have carried a two-bladed pocket knife in a traditional style called a trapper since my late teens. It is approximately 4 inches long and usually has handles (called scales) of some natural material, such as stag (deer horn), bone or wood—although sometimes a type of synthetic material is used.

I carried the same Boker Tree Brand trapper pocket knife with stag handles for over 25 years until recently retiring it. It served me well and has skinned everything from muskrats to raccoons to deer. I even skinned a black bear with it. That knife has also cleaned fish, whittled and cut everything from paper to wire (I don't recommend cutting anything metal with a knife, but sometimes you get in a bind), yet is still in good shape.

The one-bladed lockback pocket knife with either a synthetic or metal handle is a favorite style for a lot of outdoorsmen. There are several good ones on the market, just make sure you get a quality knife. If you have only one knife, it should be a pocket knife big enough to perform bigger tasks but small enough to carry comfortably in your pocket.

A sheath folding knife usually features one or two blades and folds up to be carried in a sheath on your belt. Popular styles include the

Opposite: Knives can come in all shapes and sizes, including this versatile, puukko-style knife custom made by the author using a Lauri Progression Tempered blade. Folding hunting knives like the Spyderco VG-10, top, and the iconic Buck 110, are popular with deer hunters and others who value a quality compact knife.

STAFF PICKS

Just like most *Wildlife in North Carolina* readers, many Wildlife Resources Commission employees carry a knife in their pocket. Here are a few of our favorite knives — both for practical and sentimental reasons.

David Cobb's Buck 103 Skinner

Travis Casper's Two-blade Colonial Ranger

Deet James' Buck 105

TRAVIS CASPER
Operations Manager, Wildlife Education Division

Current or Favorite Knife: Two-blade Colonial Ranger

Why I Like It: My granddaddy raised us with the idea that if you have your pants on, you should have your knife. A good knife was essential in the peanut fields and hog pens along the western rim of the Great Dismal Swamp. My favorite is a small, vintage, two-blade Colonial Ranger. I fondly remember the day my Granddaddy Rountree bought this knife for me from a local feed and seed store. The knife looks similar to the Old Timer he carried, so carrying it made me feel like my granddaddy. The Ranger has a special place in my heart and gun safe.

DAVID COBB
Division Chief, Wildlife Management

Current or Favorite Knife: Buck 103 Skinner

Why I Like It: My brother and I started hunting at 11 and were given our first gun at 12. From those early beginnings, my father always encouraged us to carry a knife, usually a pocket knife, and it must always be razor sharp — as evidenced by our being able to shave a small spot on our forearm after our dad sharpened it on his favorite steel.

My first real hunting knife was a Buck Model 103 given to me when I started deer hunting, and the black-handled skinning knife has been with me on many hunting trips over these 40-plus years. Bought from Gordon Cable (one of my dad's friends from another era) at McKnight Hardware in Greensboro, Dad had my initials engraved in the handle. It has always meant being able to handle tasks of rendering game to table fare and of being prepared for whatever would come my way in the woods. Now battered and worn, it is a symbol of my beginnings as a hunter, the generosity of my parents and the strong connection forged through hunting between my dad and me.

BB GILLEN
Outdoor Skills Coordinator, Wildlife Education

Current or Favorite Knife: Currently carry a Gerber.

Why I Like It: It's lightweight and holds its edge well.

I guess I have about 20 to 25 pocket knives and they all are special to me. Some I bought because I like their looks or to commemorate a special trip or place. Some were given as gifts by family and friends who know I have a fetish for knives. The most treasured one, however, is just an old cheap Case knife my dad gave me in 1969. He even drilled a hole in it and placed it on a chain so I could hook it on my belt loop when I went camping with my Girl Scout troop (I was 10). I love a pocket knife and I feel naked without one. You won't find me without one in my pocket and I don't wear any britches that don't have pockets!

DEET JAMES
Hunting Heritage Biologist

Current or Favorite Knife: I do not carry it any longer and have since delegated to my favorite kitchen knife.

Why I Like It: It's a Buck knife, of course, and perfect for cutting meat, especially venison, so I like its purpose, if fulfilled.

The knife, a Pathfinder fixed blade, was given to me as a gift by a girlfriend during the mid-1980s. Although I did carry it while hunting for some time, I've many other Buck knives and now prefer to carry the more compact folding knives. The "gifted" fixed-blade Buck, however, receives greater use as a kitchen knife now and, along with its sentimental value, is definitely my favorite knife.

MICHAEL NYE
Hunter Education Coordinator, Southern Piedmont

Current or Favorite Knife: Gerber, Gut Hook

Why I Like It: When I first dove headlong into the hunting world, I was green and eager. Growing up the last of five girls, I looked to my dad (seasoned squirrel hunter in his day) and my South Carolina family, who all seemed to be in the woods chasing critters more times than not. One of the most time-consuming and delicate tasks to master was the art of field dressing. Luckily for me, I had patient teachers. One of them introduced me to a Gerber Gut Hook knife and its ability to aptly and precisely field dress an animal, while reducing the chance of cutting unwanted places. For a wide-eyed girl of 15, that type of added precaution made the field to table chore more appealing and easier to accomplish. I have carried many knives during my hunting adventures, but to this day, that knife resides in my pack as one of my essentials.

MIKE ZLOTNICKI
Associate Editor, Wildlife in North Carolina

Current or Favorite Knife: Buck 110 Folding Hunter

Why I Like It: The 110 is what a working knife should be. It's well-made, convenient, sturdy and holds an edge. Like every Buck knife it has a warranty to be free of defects in material and workmanship for the life of the knife. If it breaks due to my negligence, Buck Knives offers a one-time 50 percent discount to replace it.

When I joined the Outdoor Writers Association of America, first-time attendees at their annual conference could pick any knife out of the Buck catalogue and Buck Knives would engrave it and send it to you. I chose the 110 and had my new-born daughter's name, Caroline, engraved on the blade. It's since been through a lot of deer, birds and summer sausage. In the end, the "best" knife is the one that feels right in your hand. I've accrued my share of knives over the years, both fixed blade and folding.

In 1983, the Leatherman tool took the marketplace by storm. It had needle nose pliers, flat and Phillips screwdrivers, a can opener, file, leather punch and a knife blade.

single-bladed lock-back knife, such as a Buck 110 Folding Hunter with a single locking clip blade, and the two-bladed folding hunter, which has a non-locking clip and skinning blades. The Buck 110 Folding Hunter took the market by storm when it was introduced in 1964 and remains popular. These two types of folding knives are basically intended to replace a fixed-blade sheath knife; they are a little more convenient and compact to carry on your side but do require a belt.

THE FIX IS IN

Fixed-blade sheath knives date back thousands of years but still remain useful. The folding hunter style of knife reduced the popularity of fixed-blade knives in the late 1960s and '70s, but fixed-blade knives have made a comeback in the last few years. If you are going to be doing a lot of skinning or need a knife for camping or backpacking, then a sheath knife may be a better choice than a folding knife. They are usually bigger and sturdier, making lighter work out of bigger jobs, like those around a campsite.

Although usually larger than folding knives, fixed blades vary in size, from small caping knives with blades 2 inches or shorter to large bowie-style knives with blades 9 to 12 inches in length. Both have their place in the outdoors. The caper is used for detail skinning of game while the bowie is a great survival/camp knife that can be used for anything from light chopping of wood to quartering big game.

Fixed-blade knives also come in two handle types: full tang and hidden tang. A knife tang is the projecting portion—like a shank, tongue or prong— that connects the blade to the handle. In a full-tang knife, the tang is cut in the same shape as the handle and has scales riveted to it. A hidden-tang knife features a thinner tang that is fastened to a block of handle material, like deer horn or wood, which is sanded into the desired shape to form the handle. Full tang knives are stronger, but that should only matter to those who would use it for chopping or other heavy work.

Another type of fixed-blade knife is a fillet knife, which is used for filleting and dressing fish and has a longer, flexible blade usually made from stainless steel. Fillet knives can also be handy when slicing meat and working up game animals for the freezer. The older Rapala Marttiini fillet are classic knives made in Finland that most outdoorsmen remember fondly as great knives that take a good edge. Sadly, most are no longer made in Finland but a few older models can be found for sale online.

MULTI-TOOL OPTIONS APLENTY

The original multi-tool was the old Swiss Army knife. These are made by both Victorinox and Wenger and they still have a small-but-loyal following of users. Although a quality knife, it looks like a toy compared to today's multi-tools. Sure, Swiss Army knives have tools, but they are too small to get the job done unless it is a small task, often leaving the user frustrated and in a bind.

In 1983, the Leatherman tool took the marketplace by storm. It had needle nose pliers, flat and Phillips screwdrivers, a can opener, file, leather punch and a knife blade. Each were quality tools that could handle much larger tasks than the Swiss Army knife. And all of these tools folded into its handle that fit into a small belt pouch or into your pocket.

Leatherman Sidekick

Steve Greger strives to be creative with his custom-made knives, including crafting one that incorporates a spent .50 BMG cartridge case as its handle (left) and a Scandinavian-style puukko knife with a yellow birch handle.

Soon afterward, Gerber came out with its own take on the multi-tool and it too has acquired a pretty big following. The Gerber tool does have one advantage over the Leatherman: It can be opened with one hand.

Nowadays, the market is flooded with multi-tools, but I would stick with Leatherman or Gerber, each of which now has many different models and tool options — including diamond files, serrated edge knives, saw blades and wire crimpers. I had a Leatherman Wave and really loved it until it received a burial at sea on the New River, so now I am back to using my old original Leatherman tool.

Any of these tools is especially useful to fishermen. Forgot your pliers or hemostats? No problem, you've got one in your knife. Your reel needs a screw tightened? Again, no problem, you have a screw-

A Man with an Edge *by Mike Zlotnicki*

Most people go to a store when they need a knife. Not Steve Greger.

Greger has been crafting his own knives from scratch for years, first at his home in Florida and now from his camp near Oxford, where he and his wife Wight are building their dream home. Greger, vice president for risk management for Wells Fargo, explained how his knife building process differs from traditional forging methods.

"There's two ways of putting a knife together," Greger said. "The first way, and the more traditional way like you see on the "History Channel," is forging a knife. Then there's the way that I do it, since I don't have a real forge, so the technique I use is called stock removal. I buy bar stock of high-carbon steel. I draw the shape of the blade and cut and or grind it to that final shape and then start grinding down the bevel."

Greger uses a variety of tools, including a small belt sander, a grinding wheel and a larger belt sander. After forming the blade, step two is the grinding process to get the shape of the blade and correct bevel, or cutting edge. After that, Greger treats his blade with heat in a unique "forge."

"I use what I call a coffee can forge, an insulated metal can and use a propane torch to throw heat into it," Greger said. "I put the metal in until it gets cherry red and once I'm satisfied that it's hot enough I quench it very quickly in oil. . . . And yes, I wear fire-proof gloves.

"I use oil because it's more viscous than water. Water would work, but if you do it with water, the blade could become more brittle. The cooling process is more even with oil. You heat it up to temperature and quickly quench it in oil and let it sit and cool down completely. At that point it's hardened."

After that, Greger polishes and buffs the blade and puts the final edge on it. Greger prefers a full tang knife. (The tang is the part of the blade that goes into the handle.) Handle material can be made out of nearly anything.

"I've used everything from laminated birch bark to laminated leather — like an old Ka-Bar knife, to

driver in your knife. They can solve almost any problem that might arise out on the water—almost any problem.

DIFFERENT BLADES FOR DIFFERENT TASKS

Knife blades come in many different shapes and most excel at a particular function. Perhaps the most popular blade in both folding and fixed knives is the time-proven clip blade. It has a point to it and can be used for almost anything, from skinning to picking out splinters. During the 1980s, the drop-point blade became very popular with deer hunters because of its downward sloping tip, which allowed hunters to field dress game with less chance of puncturing its internal organs. Most specialty blades are best utilized as a secondary blade on a folding knife or as a knife dedicated to a particular purpose.

where just drilling a hole through an old maple burl or an oak burl and using that as that handle," Greger said. "So once you get that attached, I typically put a metal butt plate; brass or nickel silver. I cut the tang down until I can peen it over. I stick it in my little contraption and go at it with a ballpeen hammer and create a rivet to hold that handle together. That's used in addition to epoxy to hold that stuff together."

After fashioning a handle, Greger uses several coats of tung oil to finish it and then goes about creating a leather sheath.

One of the most creative knives Greger has made features a wild turkey leg as the handle. He did this by cutting the leg open just below the spur and above the foot and taking a long drill bit to hollow out the leg and make it so that the tang will fit in the leg.

Why does he have such a passion for making knives? "I love knives. I don't know why, I just do. And I like making things. I'm a fan of handmade anything," he said.

It's a hobby that gives him an edge in his outdoor activities.

There are two types of basic steel used for knives: carbon and stainless. Now, there are several types of each and every knife aficionado has his or her favorite, myself included. All steel has to be tempered in order to make it hard enough to hold an edge and some knife companies just do it better than others. Many years ago, Queen Cutlery made a really good stainless steel knife, much better than other companies, and the same holds true today that some companies just do a better job of tempering their blades.

Full disclosure: I am not a big fan of stainless steel knives. That said, newer types of stainless steel, such as 154CM, ATS-34 and S30V, are said to be much better than previous models, like 420A and 440C. My favorite type of stainless steel is the Scandinavian Sandvik 12C27 used by European companies such as Helle, Mora and Lauri, and can now be found in certain knives manufactured by the Buck Knives Inc. as well.

Carbon steel is my preference for knives. Yes, it will rust if not taken care of and it will turn to a gray color after several years, but I like the patina it acquires over time, so its advantages outweigh any maintenance issues. Nothing takes an edge like carbon steel and sharpens as easily as it does. If tempered correctly, it holds an edge as well.

Again, not all carbon steel is created equal. I think the older carbon steel made in Solingen, Germany, holds an edge but is fairly easy to sharpen and takes a razor edge. I also like the Scandinavian carbon steel fixed-blade knives for the same reasons. Several knife companies are making blades out of D-2, a newer carbon that is harder to sharpen but holds an edge for a long time.

I do prefer my fillet knives to be made out of stainless steel. These kinds of knives are regularly used around water, so the extra corrosion resistance of stainless steel is a definite advantage.

WHICH ONE IS FOR YOU?

As I stated earlier, I think everyone needs a folding pocket knife. So go to a store that carries a lot of different knives and look at several different types. Handle them, open and close the blades, see how it fits in your hand, slide it into your pocket (with permission) to see how it carries. There should be one that speaks to you.

If you hunt big game, you need a folding hunter or fixed-blade knife to skin and work up game. If you're a handyman type, I highly recommend a multi-tool because it will save you more steps in your life than anything you can purchase.

There is no right knife for everyone, just one that fits your needs and trips your trigger. So get yourself a quality knife, keep it sharp, and the next time someone asks if anyone has a knife, you can say "I do, but be careful . . . it's sharp." ◆

Marty Shaffner is a frequent contributor to Wildlife in North Carolina *and a fishing guide in northwestern North Carolina.*

There is a critter out there that is fairly well-known, commonly recognized, and very, very misunderstood

WRITTEN BY *Quent Lupton*
ILLUSTRATED BY *Amy Friend*

This creature goes by a few different names, including "cow ants" or "cow killers." Well, it turns out, neither of those names holds much truth. These large, colorful insects are not ants. But rather they are wingless female wasps.

As far as the cow part goes, although this wasp does pack a powerful stinger, it's never been known to kill a cow. The better name for them is the red velvet wasp . . . although they aren't actually covered in velvet, either. I decided to learn a bit more about this insect, and as is often the case with the natural world, facts are more fascinating than fiction.

Let's begin by correcting some information out there. Velvet wasps (*Dasymutilla occidentalis*) are insects, but not ants. They do not even belong to the same family as ants, which are in the family Formicidae. Velvet wasps are in the family Mutellidae. True ants are social insects, living in colonies; red velvet wasps are solitary.

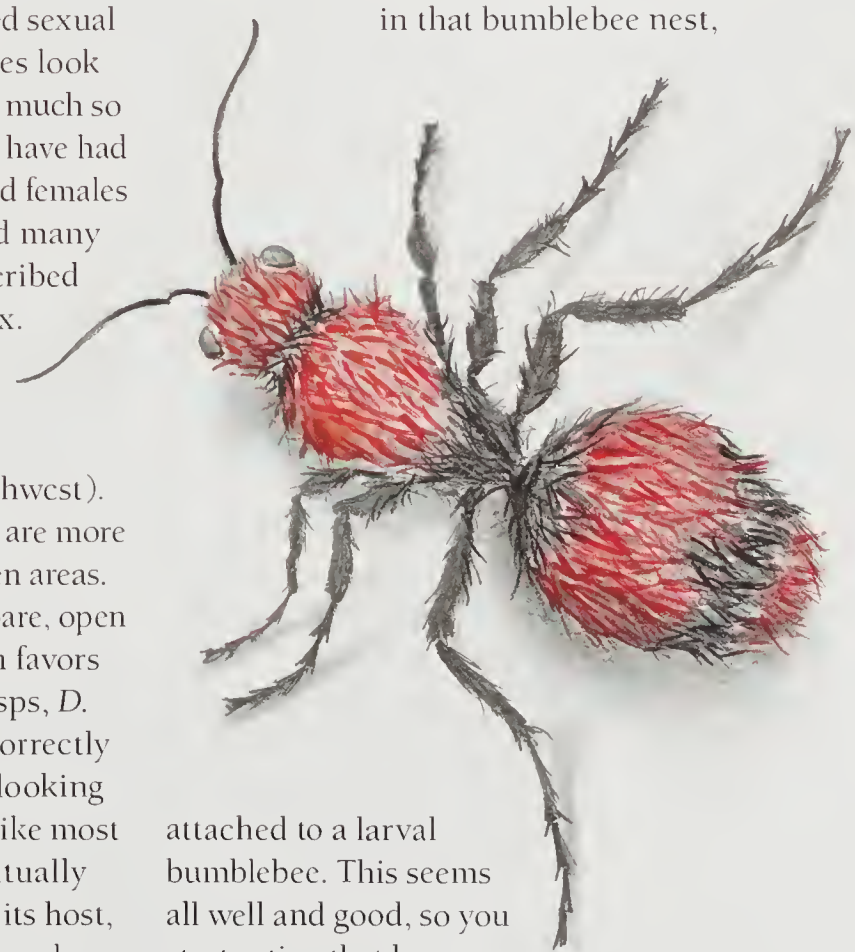
Female red velvet wasps really do look like large ants, but a close examination reveals two characteristics that distinguish them as wasps. First, like other bees and wasps, a velvet wasp's antennae are straight; there is not an elbow or bend typical of ants. Also, the connection between the thorax and abdomen is narrow (a wasp waist), lacking the characteristic swelling that would be present on a true ant. A lot of the confusion is because most of us only pay attention to females, which are wingless, and do look like a really big ant. Males are actually large winged creatures that look more like an average wasp.

Although you are likely to only knowingly encounter the red velvet wasp, their family is represented in North Carolina by 20 or so different species. Worldwide, the family Mutellidae contains over 4,000 known species, with over 400 species in the United States. A little bit of internet research reveals this wasp family has some very colorful species. It is characterized by marked sexual dimorphism (the males and females look very different from one another), so much so that entomologists and taxonomists have had trouble determining which males and females belong together in one species, and many species have been named and described based on specimens of only one sex.

Most species of velvet wasps are found in relatively bare, dry places (most of the species in the United States occur in the arid Southwest). In North Carolina, red velvet wasps are more likely to be found in sandy, dry, open areas. It isn't so much that the wasps like bare, open ground, but rather their prey often favors that type of habitat. Like most wasps, *D. occidentalis* is a parasite, or more correctly a parasitoid, and is in those areas looking for bumblebee nests. A parasitoid, like most wasps, will feed off of a host, eventually killing it (a true parasite may harm its host, but rarely kills it). Our red velvet wasp lays its eggs on the outside of a larval bumblebee, and when the wasp hatches, that bumblebee serves as its food supply.

In Defense Of Velvet Wasps

Now that we have a better understanding of red velvet wasps, let's dive into their world, beginning as an egg. As a red velvet wasp, you would hatch and find yourself underground in that bumblebee nest,



attached to a larval bumblebee. This seems all well and good, so you start eating that larvae. Eventually you will consume it and undergo your first stages of development in that nest. Overwintering here, you

will emerge as a fully-formed adult the next season. Bumblebee nests are annual, so you don't have to worry about being surrounded by the angry family of the offspring you just ate. If you are male, you will have wings and use them to take flight to look for females. If you are female, you are wingless and things are more . . . complicated.

As a female velvet wasp, you emerge into this world. You are brightly colored, you like to wander around in open areas, you are active during the day and you cannot fly. Unlike a lot of other wasps (and their bee cousins), you are not social — you are a loner. To a potential predator, you are a large, tempting packet of carbohydrates, proteins and fats. As much as that predator might like to get all of those nutrients, they are pretty important to you, too. So, what do you do to keep from being eaten? First, you've evolved a warning pattern. Your red and black bands stand out against each other, and against your background. This aposematic coloration, or warning colors, may cause predators to think twice before considering you as a snack. To a potential predator, if you aren't hiding, you might be dangerous.

If your bold coloration isn't enough to deter a predator, you can squeak. Maybe squeaking will cause a predator to pause long enough for you to find cover (or it may warn off a cow that could accidentally step on you!). This sound isn't a vocalization; velvet wasps produce this by rubbing body parts together, the same way a cricket chirps. Near the waist of a velvet wasp is a structure called the stridulitrum, which acts like a tiny washboard. When rubbed, the stridulitrum produces a squeaky/chirpy warning noise.

NATURE'S WAYS

How Do Velvet Wasp Squeak?

See Nature's Ways, page 43.

Years ago, I (carefully) caught a velvet wasp on a sidewalk and attempted to keep it in a terrarium. I did some research and tried to create a proper habitat to make her happy, but all she did was pace and squeak . . . constantly. I ended up releasing her and I hope she was able to quietly resume her life. There may be some bumblebees that wish otherwise.

So you've tried to be showy and you've tried to be loud. But what if something is ignoring all that and still coming after you? You can run for cover. You aren't the fastest thing on six legs, but you can cover ground quickly when necessary. However, sometimes you still get caught. If a predator is naive, or desperate, enough to bite you, your story still isn't over. Your velvet is actually a collection of tiny little barbed sticks that make you less than tasty. Your skin is extremely hard and slick; some predators may not be able to crunch down on you. And you haven't even used your stinger yet.

A Stinging Success

That stinger, of course, is the reason for the cow killer nickname. Thankfully, I've never been stung by a cow killer, but I know a couple people who have, and they tell me it's bad. Clyde Sorenson likens the sensation to being stabbed with a sharpened ice pick, heated red hot. The stinger can be a quarter of an inch long and creates a pain that doesn't go away quickly.

Early in his career, Dr. Sorenson, an entomologist at N.C. State University and a regular contributor to *Wildlife in North Carolina*, was leading a group of campers on an interpretive nature hike at Morrow Mountain State Park. Happening upon a velvet wasp, he decided to catch it and give his students a learning experience.

"I was holding it up for them to see," Sorenson said, "and trying to recall what I knew about it. I forgot one important part, and right about that time, it reminded me."

Sorenson may not have imparted a lot of information about the wasp to those campers, but "I ended up teaching those girls a whole new vocabulary," he said. Talking about red velvet wasps later, Sorenson remarked: "It won't kill a cow, but the cow might wish it were dead."

W. L. Meyer, at the University of Florida, produced a comparison of different insect venom toxicities toward mice, and surprisingly, the velvet wasps' venom scored the lowest of all the organisms studied. (Remember, this only tested toxicity — not pain caused by the chemicals, or the feeling of a quarter-inch stinger being inserted into you.) Nothing I've read suggests that the sting causes any long-lasting effects, other than an aversion to velvet wasps.

So the venom may not be good at killing mice, but something about these wasps keeps them from being eaten very often. A few researchers have noticed that this critter is a conspicuous part of the landscape, and often active at the same time as certain predators like broadhead skink lizards. However, remains of the female velvet wasps are almost never found in those predators' stomach contents.

In controlled experiments in which velvet wasps were presented to broadhead skinks, successful predation occurred less that 10 percent of the time (compared to 100 percent success of the skinks eating crickets in that same study), and the skinks were never successful on their first attempt. Many of those skinks were stung on the tongue after that

initial attempt to feed and subsequently did not attack the wasp again. In the wild, that first attempt may be the only chance a skink gets before the wasp can find somewhere to hide, and it may be the only time that skink wants to try for that particular snack.

Males, on the other hand, are less complex. They may not have the same behaviors and defenses, because they can do something the females cannot: fly. But don't let the idea of a flying cow killer scare you. One thing males cannot do is sting. The stinger is a modified ovipositor (Latin for "egg placer") so males do not have one. After emerging from the bumblebee nest, males simply take to the air in search of females to mate with, probably by following a trail of pheromones. Because they are not limited to the ground and are less numerous than females, they are not observed as often. They are, however, just as large, if not larger, and almost as brightly colored. As adults, both sexes live for just a few months, feeding on nectar while attempting to survive and mate, and continue the species.

Trying not to get eaten is only part of what these animals do in their day-to-day lives. They also have to mate. Velvet wasp breeding events are tied to the life cycle of their larval hosts. Mating occurs late enough in the warmer months to give time for their offspring's food source, larval bumblebees, to be around. Once a female has mated and carries fertilized eggs, she will search for a suitable site to lay her eggs. Females find and enter into a bumblebee nest and search for a developing bumblebee. As you may imagine, the hosts are not so thrilled about this visit, and will try and drive the female off — this is another reason these girls have evolved such a thick skin. If she makes it in, she lays her egg on the bumblebee offspring, and leaves. Once laid, the egg hatches, and the newly hatched grub-like velvet wasp larvae begins feeding, and the whole cycle starts anew.

As worrisome as they may be to their prey, people shouldn't be concerned about red velvet wasps. Despite the caution (or fear) that some people experience when they see a red velvet wasp, this critter has way more defensive and warning adaptations than offensive ones. These wasps are no real threat to people or property. They are solitary, so you do not have to worry about an infestation. They do not live in, or damage, man-made structures, nor are they dangerous to pets or livestock (despite their common names).

I DID SOME RESEARCH AND TRIED TO CREATE A PROPER HABITAT TO MAKE HER HAPPY, BUT ALL SHE DID WAS PACE AND SQUEAK... CONSTANTLY.

Their stings can be painful, but unless by some small chance you are allergic to their venom, it isn't a life-threatening event. For the most part, they seem to just want to be left alone — and based on their stings, that sounds like a good idea.

All in all, the red velvet wasp is a pretty interesting critter — and just plain pretty in its own right. So, if you happen to see one, count yourself lucky — just don't handle the female and she won't bother you. Maybe take a picture, shoo her away from an area where a child may step on her, and let her go about her day. There's no reason to be afraid — unless you are a bumblebee. And if the worst happens, consider what Sorenson told me:

"As bad as the sting is, at least they are solitary. You won't get swarmed."

That was comforting, before he paused and added: "But, unlike bees, their stinger isn't barbed, so it could sting you multiple times."

Great. Well, at least they won't kill your cows.

Quent Lupton is a professor of biology at Craven Community College in New Bern. This is his first article for Wildlife in North Carolina.

This Lady is No Dainty

Dancing with a ladyfish can be like wrestling a pint-sized tarpon on light tackle

WRITTEN BY MIKE MARSH

TOSH BROWN

A Lady is demure and reserved, showing great refinement and tact with an air of impeccable politeness. A ladyfish, however, is the polar opposite in its disposition. Anything but dainty, the ladyfish puts up a fight when an angler hooks one on light tackle.

I will never forget my first dance with the ladyfish. It was summertime in the late 1970s, and I, a new arrival to the coast, was more accustomed to catching freshwater fish. Just beginning to learn about saltwater fishing, with precious little knowledge available back then when compared to these days of instant internet access, I was bottom fishing at night for black drum using crab for bait at a lighted dock in the Cape Fear River near Southport.

The dock had extremely bright lights, which attracted me to them like a moth to a flame as a way to beat the heat of a midsummer's day. Fishing at night was a common practice in freshwater and I had caught crappie and striped bass fishing under artificial lights at the bridges of Lake Norman, where I had lived before moving to Wilmington. The lights attracted schools of baitfish and swarms of squid in the same manner that artificial lights had attracted shad and other forage fish at the inland lake. It was as hot and humid an evening as the southeastern coast of North Carolina can conjure up, with the lights casting an eerie glow and creating black shadows behind every piling and crossmember.

Suddenly, small schools of marauding predators churned the water. Water erupted everywhere, inside the circle of light as well as outside of it, as far out on the river as the lights' faint aura could illuminate jumping silvery fish and splashes of white foam. Panicked baitfish leapfrogged in unison across the surface as they attempted escape. Then they skittered, radiating outward in all directions as a fish launched itself upward right through them, attacking them with the power of a submarine-launched Polaris missile. While I had seen bluefish aggressively slaughter hapless baitfish under these same lights on past trips, these fish were putting the feeding tactics of bluefish to shame. One of them streaked by with the tips of its dorsal and caudal fins slicing the surface.

Not knowing what the fish were, but certainly wanting to find out, I rattled through a tackle box filled with nothing but bottom rigs until I discovered I had only one lure, a quarter-ounce red jig head. I threaded a white plastic grub with a flat, pink tail onto the hook and made a cast.

MIKE MARSH

MIKE MARSH

Top: David Franklin shows off this ladyfish he hooked in the Intracoastal Waterway near Carolina Beach. Bottom: A walk-the-dog surface lure like the Heddon Zara Spook can draw explosive topwater strikes.

Instantly, a fish slapped the lure. I struck it back, setting the hook as hard as the line would withstand without breaking. The fish struggled against the resistance for a few seconds before throwing the lure back in my face. I missed many strikes before finally hooking up. What occurred next was the best fight I had ever experienced from any fish that weighed less than 10 pounds.

The fish unzipped the line, threatening to cut it off as it feinted behind the oyster shells growing on the dock pilings. It leaped higher than my head, turning pirouettes in the air. The fish shone like a living mirror as it maneuvered to take back the spotlight. Eventually it tired and I landed it with a net. I removed the jig and, looking deeply into the fish's wide eyes, studied it intently for later identification before letting it go.

I kept on casting, enticing strikes and setting the hook as hard as was prudent, until the hook point broke. I was now out of lures and had missed landing all of those other fish, leaving me to ponder what in the world I had been attempting to catch.

All Fight; Not Food

There were no cell phones back then and I had no camera. All I could do was question the few inshore fishermen I knew about what they thought I had caught. When one of them opined that it was probably a ladyfish, I looked up the fish in a book. Sure enough, there she was, with her large, oval, come-hither eyes and in all of her silvery splendor.

The thing about ladyfish back then was that nobody caught them on purpose. I discovered that they were only considered good for use as crab pot bait after fishermen caught them in gill nets set for other species. They work well as crab bait because they are bony, tough and thin—attributes that won't place the fish on many menus.

Over the years, anglers have grown to respect them for what they truly are: one of the North Carolina coast's greatest light-tackle saltwater game fish. There was only one inshore fishing guide at Carolina Beach back then. Now, there are hundreds of skinny-water guides along the state's coast and, when the weather turns hot in June, they begin chasing around with clients only too happy to dance with a ladyfish.

Ladyfish simply show up. One day, the waters are free of them. The next day, an angler cannot get a lure or bait into the brine without a ladyfish taking up the challenge. With experience, an angler learns to identify ladyfish by the way they move quickly across the surface, chasing baitfish. The sound of their feeding activity is as loud as a building of bricks hurled into the water. However, it is the sight of a single fish leaping that is their most reliable calling card. No other fish has the long, slender, shiny, torpedo-shaped appearance. Indeed, the ladyfish possesses all the fighting attributes of the tarpon, but grows to only 2 percent of a tarpon's size.

Ladyfish will attack live and cut bait fished by stationary techniques, so that is how most anglers receive their first formal introduction. When the fish hits the bait, the hook may embed in the tongue, gills or somewhere outside the mouth. The jaws and palate are of such hard bone that a hook may not penetrate.

My first hook-up came with one of the old chrome-plated hooks that were as dull as a dandelion. Modern, chemically sharpened hooks are sharp as needles so they stay stuck once the fish is struck with much more reliability. An angler is just as likely to have a successful hook-set with a No. 6 treble hook dangling a live mullet from speckled trout float rig as with a No. 2 Kahle hook dragging a menhaden on a flounder rig. Live or dead menhaden, mullet or shrimp (which are standard saltwater fare) will add the ladyfish to your dance card.

Tailor-Made for Light Tackle

For me, fly-fishing for ladyfish is the zenith, the Blackpool Dance Festival if you will, of all light-tackle inshore fishing. All of the elements for perfection are there, if you can make them come together. First, you check out the crowd of observers—the seagulls and pelicans diving onto the schools of baitfish. Beneath them, shimmering and sassy, are ladyfish begging for an invitation.

Any fly rod from 6-weight to 10-weight will work, but 7's and 8's are the most popular. Pick an intermediate sinking line or a

floating line. Feel the rod's rhythm while tossing a Clouser, a resin-bodied fly or anything else that looks like a baitfish. It probably will not make any difference as long as the fly lands near the fish. The fish takes the fly so hard it usually hooks itself as your arm goes up instinctively to take up the slack. If the hook hits a soft spot, the dance begins.

Next in the exhilaration department is catching a ladyfish with a topwater lure. The best lures are the walk-the-dog type lures, including the MirrOlure Top Dog series and Heddon Zara Spook series. A cast into the middle of a ladyfish party will elicit a strike with near-certainty. Most ladyfish schools are small, with perhaps a half-dozen fish. There are just lots of these small cliques, scattered all around but near each other, chasing after stirred-up baitfish. One of the fish, or perhaps all of them, will follow the flip-flopping lure, but it usually will not be for long. If a strike is a miss, the trick is keeping the lure coming until you feel the weight of the fish. When the line comes tight, set the hook hard and the fish lifts off at the strike or shortly thereafter.

My standard rig for inshore fishing is a light saltwater spinning outfit with a 10- to 20-pound braided line. When using a topwater lure with a braid, it is important to tie a stiff, monofilament leader between the line and the lure. Otherwise, the lure spins on the cast, causing it to snag on the limp braid. I use a 15-inch leader of 15- to 20-pound test fluorocarbon. Other anglers may use a different setup, but this has worked well for me and it works as well with standard hard-plastic lures as it does with topwater lures.

A Scorned Fisherman

One of the best tips I can give for landing ladyfish is using a landing net, preferably with a rubber or rubber-coated nylon mesh to prevent hooks from embedding in the weave. Losing minutes of fishing time extracting a lure from a net may cost you multiple shots at a ladyfish school.

During a recent fall outing, I was into a school of ladyfish just a few miles upriver from the location of that first unforgettable evening. I was tossing a topwater lure for speckled trout, when I saw that telltale shape making a splash. I hooked up with the ladyfish and played her like a fiddle. The dance took us across the water on a 100-yard promenade. She lived up to her promise, twirling and whirling, leaping and sashaying.

I needed a photo of her and she looked like she had danced long enough. Rather than use a landing net, I grabbed the leader and rather indelicately tried to drag her from the water.

Alas, she was only toying with me. She was right there, within my grasp, when she suddenly regained her strength. Leaping away, with that expensive piece of pierced jewelry dangling from her lips, I swear I could hear her taunting laugh. She was larger than most, maybe 4 pounds. As it was with the dances of youth, the partners you remember the most are the ones who got away. ◆

Over the years, anglers have grown to respect them for what they truly are:

one of the North Carolina coast's greatest light-tackle saltwater game fish.

MIKE MARSH

This ladyfish struck a jig with a soft plastic trailer intended for speckled trout. Ladyfish are often caught by anglers targeting other species.

Wilmington-based writer Mike Marsh is a frequent contributor to Wildlife in North Carolina.

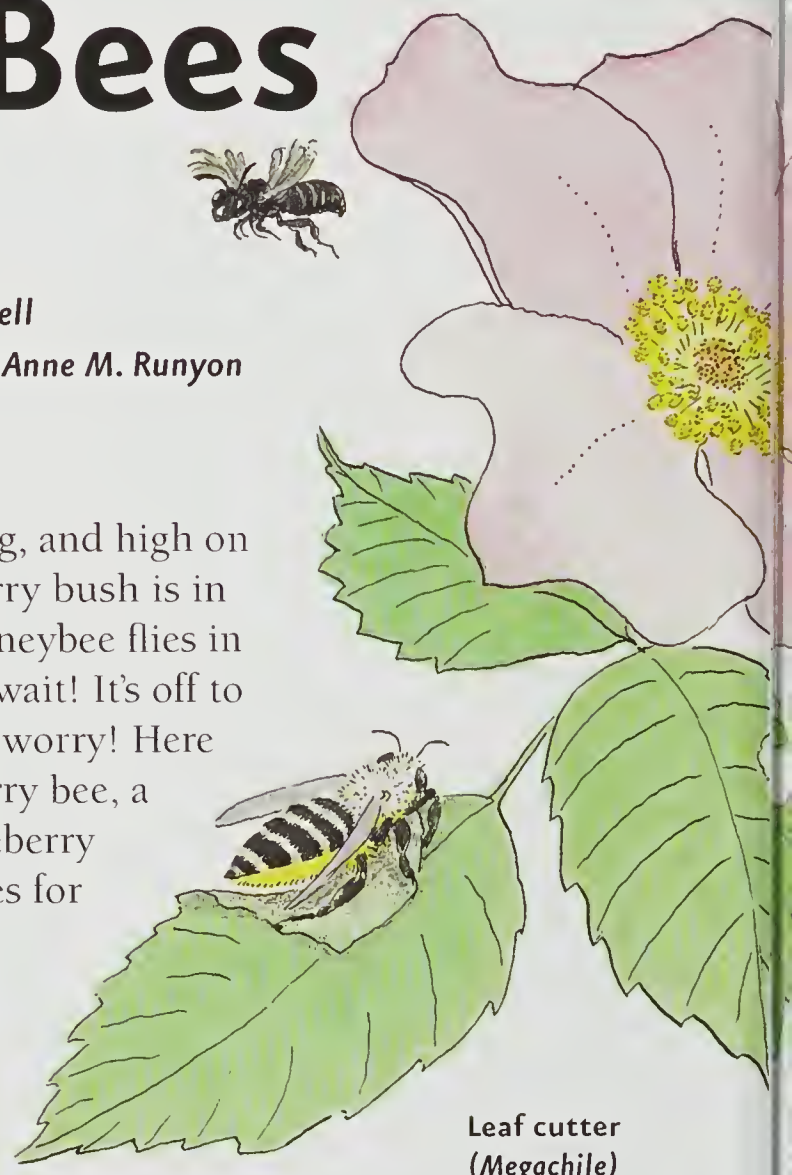
We rarely notice them, but we need to appreciate . . .

Our Bee-utiful Native Bees

written by Helen Correll
illustrations and nature activity by Anne M. Runyon

Southeastern blueberry bee (*Habropoda*)

It's a warm spring morning, and high on a mountaintop a blueberry bush is in full bloom. Bzzzzzz . . . a honeybee flies in and visits a few flowers, but wait! It's off to visit an apple blossom. Don't worry! Here comes a Southeastern blueberry bee, a native bee that pollinates blueberry flowers. This amazing bee lives for the blueberry flower. One of these bees can visit and pollinate as many as 50,000 blueberry flowers in its brief life.



Leaf cutter (*Megachile*)

RESTLESS NATIVES

The blueberry bee is one of over 500 species of native bees that lived and pollinated flowers in North Carolina long before honeybees arrived with English settlers. They come in different sizes and shapes, with long tongues or short, and are active in different seasons. They nest in varied places, such as bare soil, hollow cavities of stems or reeds, or holes in rotting tree trunks. Some native bees—like blueberry bees, azalea bees, orchard bees and squash bees—are specialists and have specific host plants that they work. Others are generalists, visiting many different kinds of flowers. Most native bees have pollen baskets of some kind, feathery hairs all over to trap loose pollen, and a second stomach, called a crop, for carrying nectar back to their nests.

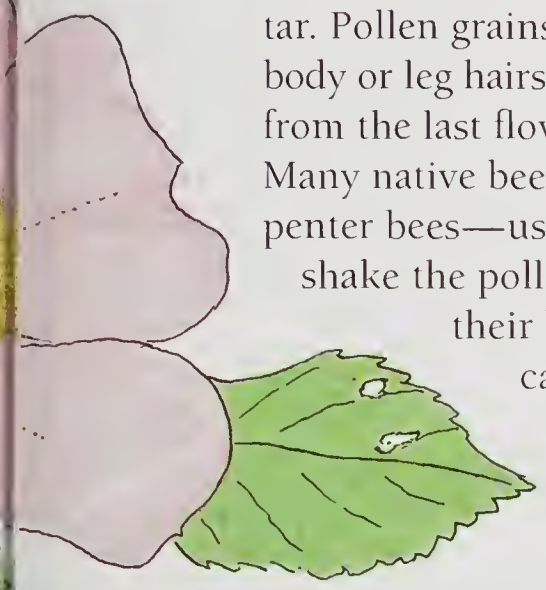
Amazing native bees find flowers through smell and color patterns, and remember which flowers they prefer. They are more efficient pollinators than honeybees, not because they are better at carrying pollen than honeybees, but because they are not! Honeybees pack the pollen into tight balls in specially shaped baskets on their legs, but except for bumblebees, most native bees are not very good at carrying pollen. They carry it loosely packed or on the hairs around their bodies and easily drop it when they fly into a flower. The more pollen dropped, the higher the chance of pollinating the flower.

Another important behavior of native bees is that they do not stop working when the weather is bad. Native bees are busy pollinating even when it is damp or cloudy, while honeybees stay hunkered down in their hives.

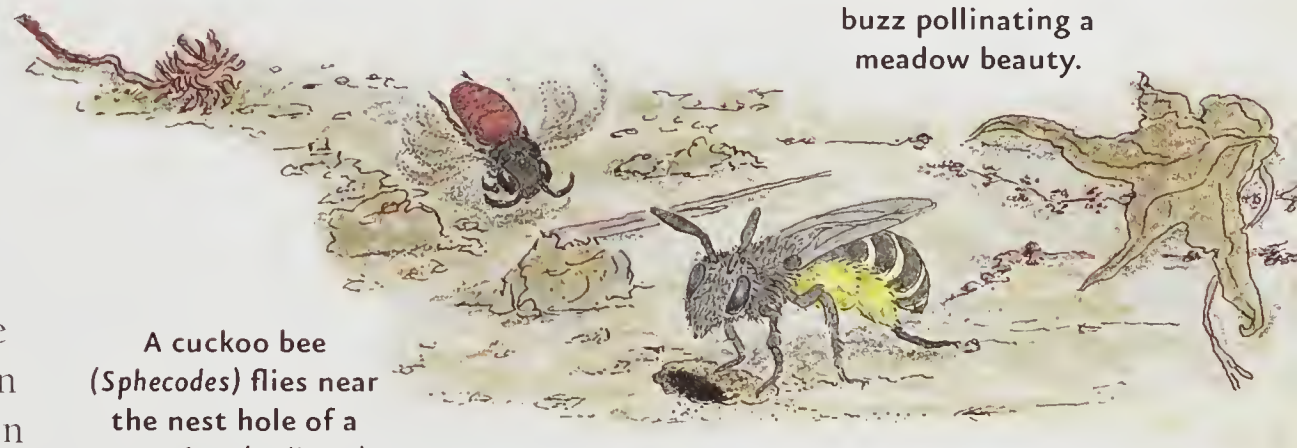
Carpenter bee and its miniature version *Ceratina (below left)*

AN IMPORTANT JOB

Our native bees pollinate 80 percent of all flowering plants, including fruits, nuts and vegetables you eat every day. Pollination is the transfer of pollen from the male flower part (anther) to the female flower part (stigma), which allows plants to develop seeds. A bee pollinates by pushing into a flower to collect pollen or nectar. Pollen grains from the flower's anther stick to the bee's body or leg hairs. When the bee moves on, some of the pollen from the last flower rubs off on the stigma of the new flower. Many native bees—including the blueberry, bumble, and carpenter bees—use buzz pollination, a technique used to literally shake the pollen out of the flower. They grasp the flower with their legs or mouth and then vibrate the flight muscles, causing the pollen to rain down on them, often covering the bee.



This metallic green bee (*Augocloropsis*) is buzz pollinating a meadow beauty.



A cuckoo bee (*Sphecodes*) flies near the nest hole of a sweat bee (*Halictus*).

SOLITARY LIVES

Most of North Carolina's native bees are solitary, which means they do not live in colonies with a queen, as do honeybees. In fact, you might say that each female solitary bee is her own queen. After mating with a male, she will build a nest, provision it and lay an egg in many brood cells with no help from other bees. Some sweat bees like to build nests under the bark of a dead tree, while leaf cutter bees use holes bored by other insects, such as beetles. Hollow reeds and grass stems are the preferred location for mason bees. Carpenter bees use strong jaws to bore their own holes in solid wood, often in man-made structures such as deck railings or house siding. Certain sweat bees share a "front door" and then build individual nests off the main room, leaving a guard at the door. Often, because conditions in an area are perfect for building a nest, many individual mining bees will build separate nests in the ground side-by-side. Even though you see many bees, it is not a colony because they are not working together or helping each other.

Most of these solitary nesting bees construct brood cells, one for each egg, using various materials to wall off the cell and protect the egg from parasites. The bees that do not construct brood cells are parasitic and are called cuckoo bees. Cuckoo bees sneak in and lay their eggs in the nests of other bees. They kill the host's eggs and replace them with their own. Once hatched, cuckoo bee larvae eat the nutritious nectar/pollen ball the host placed for her own eggs. When they grow to adulthood, they do the same with their own eggs. Over time, cuckoo bees have lost their pollen baskets and most of the hair for carrying pollen since they don't need to collect food for their young.

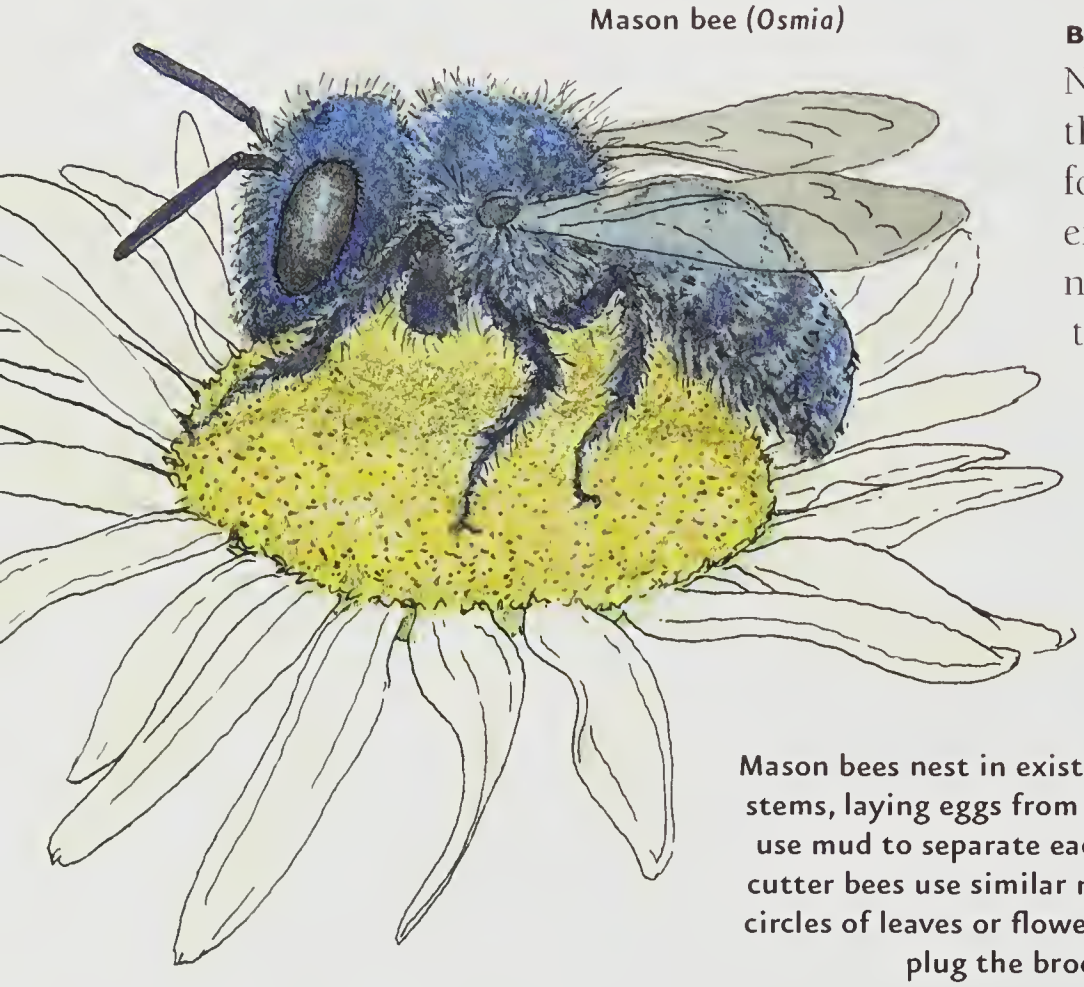
Pollen coats the furry legs of this sweat bee (*Halictus*).

Queen Eastern bumblebee (*Bombus impatiens*)

SOCIAL LIVING

A few of the solitary bees show some cooperation with other bees, but the large, furry bumblebees are the only truly social bees in North Carolina. They nest underground in organized groups of up to 300 bees. A mated queen comes out of hibernation in the spring to build a nest in a shallow cavity, such as an abandoned mouse nest. She will stock it with food (a waxy "honey pot" filled with pollen and honey) and build six or so brood cells in which she lays eggs. The first eggs to hatch will all be daughters who become worker bees. These workers take over all the jobs around the hive, leaving the queen nothing to do but lay eggs. At the end of the summer, the queen lays a last few eggs that become males and females who mate. The females hibernate through the winter and become next year's queens. The old queen, her workers and drones all die.

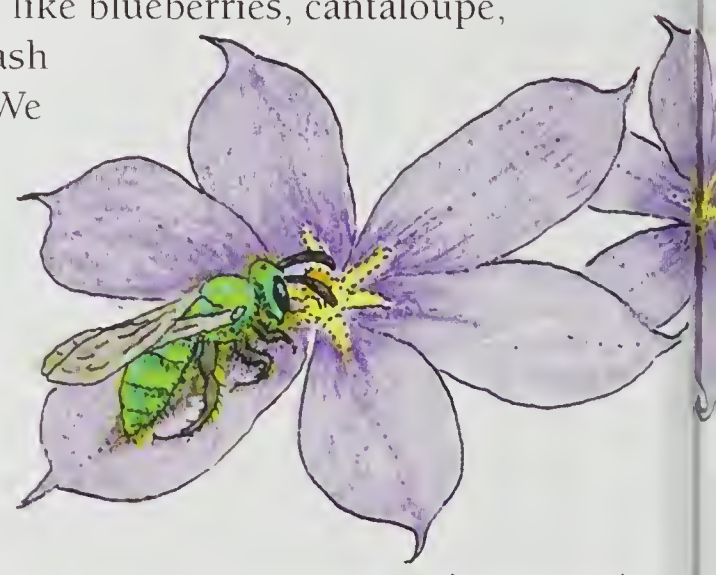
Mason bee (*Osmia*)



Mason bees nest in existing holes, or hollow stems, laying eggs from back to front. They use mud to separate each brood cell. Leafcutter bees use similar nests, but cut small circles of leaves or flower petals to line and plug the brood cells.

BEE THANKFUL

Native bees do not know about the invaluable service they are providing. They are simply gathering food for themselves and their offspring, and yet we cannot exist without their pollination of the flowers, fruits, nuts and vegetables grown in this country. It is hard to imagine life without beautiful native flowers like azaleas, and foods like blueberries, cantaloupe, cucumbers, squash and pumpkins. We should all be thankful for our native bees.



Little green bee (*Augochorella*)

Get Outside

Build a mason bee condo: You'll need a recycled aluminum can, a pencil, some sheets of newspaper and a glue stick. Cut strips of newspaper a little longer than your aluminum can and 3 inches wide. Roll the strips around the pencil long-ways and use a glue stick to secure it. Slide the tube off the pencil and make more. You need enough tubes to fill the can. Fold one end of the paper tubes shut and trim the open end to fit just inside the can. Place the can outside in a protected spot near a dripping faucet or other damp spot. Each tube can be a nesting spot for a female mason bee.

Read and Find Out

- "The Bee, A Natural History" by Dr. Noah Wilson-Rich, Princeton University Press, Princeton and Oxford, 2014.
- "Attracting Native Pollinators" by The Xerces Society, Storey Publishing, North Adams, MA, 2011.
- "What If There Were No Bees?" by Suzanne Slade, Picture Window Books, 2010.

In *Wildlife in North Carolina*

- "Plight of the Honeybee, Flight of the Bumblebee" by Clyde Sorenson, September 2008
- "A Queendom of Bees" by Curtis Wooten, April 1982

Find out more about Project WILD Workshops and literature at the Wildlife Commission's website at ncwildlife.org.

Mason Bee Sculpture

(based on a North Carolina native—*Osmia chalybea*)

1) Copy on sturdy paper. Cover stock works well.

2) Cut out body and wings.

3) Fold body in half along ··· line, and cut open wing slot on thorax.

4) Flatten body and fold legs under thorax along ··· lines and then out again along ---- lines.

5) Fold head under thorax along ··· line and out again along ---- line.

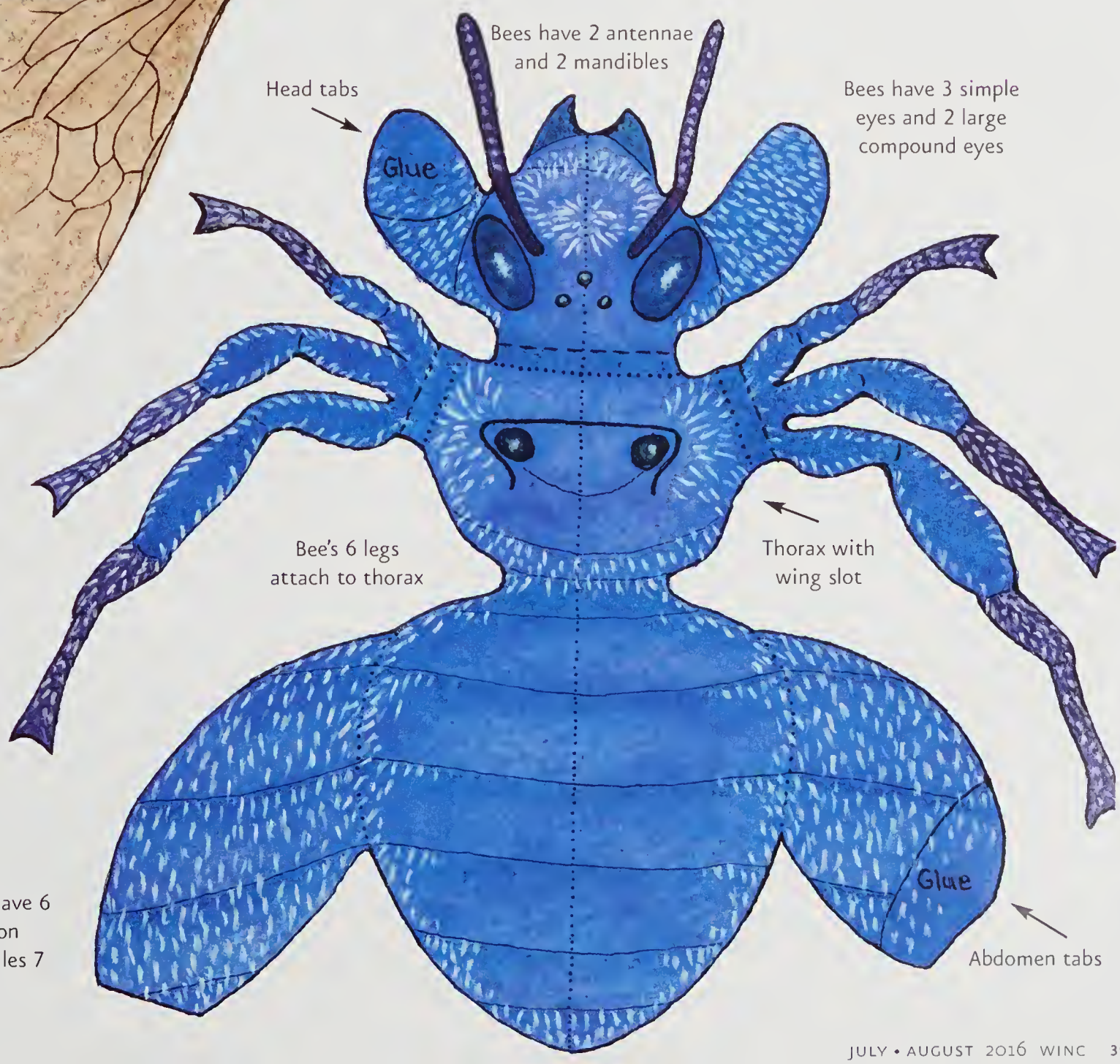
6) Carefully slide wings into wing slot.

7) Turn bee over and tape slot shut to secure wings.

8) Curl head tabs together, matching the curve, then glue (or tape).

9) Gently pinch down along curved edge between abdomen and tabs.

10) Now, curl abdomen tabs together, matching the curve, and glue (or tape).



Urban Bear Study Reveals Active Population

Bear N059 peered out of her den at researcher Nick Gould, who was lying prone just 20 feet away on a warm March day. After watching the bear for 45 minutes, Gould fired a tranquilizer dart that hit her left shoulder.

The black bear bolted from the den, just 40 feet from the Blue Ridge Parkway northeast of Asheville, and rambled down the steep, wooded mountainside.

N.C. State University researchers Gould and Jennifer Strules followed the bear for 30 minutes, zeroing in on signals from her satellite-tracking collar. Finally, after watching the bear from a distance for an hour, they gave up pursuit.

The tranquilizer didn't immobilize N059 as hoped. The researchers for the Urban/Suburban Bear Project wanted to replace her 2-year-old collar with a new one as part of a five-year study of the lives and movements of bears in and around Asheville. The $500,000 collaborative project by N.C. State and the Wildlife Resources Commission is paid for with federal Pittman-Robertson excise-tax revenues from the sale of firearms, ammunition and archery gear.

Researchers have captured more than 120 bears and have found 22 dens during the first two years of the project. As of spring 2016, they are tracking 20 bears with collars and plan to collar 20-to-30 more by summer's end. The collars reveal that bears move back and forth from rural areas to close-in neighborhoods. One wide-ranging male last year ambled 80 miles to far western North Carolina and returned to Asheville. Bears pop up regularly in city backyards.

"People have no idea there are so many bears here," Wildlife Resources Commission mountain region supervisor Mike Carraway said.

Nick Gould, project lead for the Urban/Suburban Bear Study in Asheville, that tracks bear movement in the area over a five-year period, cradles the head of black bear N094, a 350-pound male. Biologist Jennifer Strules records data on black bear N043, a 433-pound male.

The purpose of the study is to look at the ecology of bears living in an urban-suburban environment, identify travel corridors for future conservation to allow bears to disperse and to come up with strategies to reduce human-bear conflicts. North Carolina's expanding bear population is estimated at 20,000 with the animals occupying almost two-thirds of the state. Some highlights from the first two years include:

- Some bears have spent more than 90 percent of their time inside the city limits.
- Two captured males weighed more than 500 pounds and some yearlings weighed more than 200 pounds.
- A total of 17 of 18 collared females produced 45 cubs last year.

Bear N059 gave birth to a cub in 2014–15 but not this past winter. Gould, the project lead, said the 5-year-old entered the den in early December where a tree toppled over and the root ball left open an earthen cavity covered with a flat rock and dead limbs. Closer inspection of the den, after the researchers gave up their pursuit of Bear N059, revealed an orderly home. No poop, no tufts of hair and, most remarkably, no odor.

During hibernation, slumbering bears do not defecate or urinate and recycle their waste in their body, keeping a clean and tidy house for their cubs and themselves.

For more information on the bear study, visit facebook.com/urbanbearstudy.

–Jack Horan

e NEWSLETTER

Get N.C. Wildlife Update—news including season dates, bag limits, legislative updates and more—delivered to your Inbox from the N.C. Wildlife Resources Commission. Sign up at ncwildlife.org/enews.

Youth on Target at Hunter Education Tournament

A Yadkin County high school and a Stanly County middle school took top honors at the 2016 Youth Hunter Education Skills Tournament in late April.

The annual pre-collegiate tournament, sponsored by the North Carolina Wildlife Resources Commission's Hunter Education Program, allows youth to showcase outdoor skills and demonstrate safety techniques that they learn in the program. The state tournament is held annually at the John F. Lentz Hunter Education Complex in Richmond County. Forbush High School won the senior division with an overall score of 3,843 out of a possible 4,000 points to win the tournament for the second year in a row. North Stanly Middle School won the junior division with an overall score of 3,658.

Youth competed in team and individual categories for rifle, shotgun, archery and orienteering on senior (high school) and junior (middle and elementary schools) divisional levels, with overall team and individual awards based on aggregate scores in all events.

Approximately 600 students from 60 teams participated in this year's state tournament. They advanced from their regional tournaments, held in March in nine districts across the state. Total attendance—including spectators, staff and competitors—at the state tournament was estimated at 2,000.

"It was another great show of competition, safety and sportsmanship from competitor to coach," said Tim Lemon, the Commission's shooting sports coordinator. "It's great to see the months of hard work and dedication to a skillset come to fruition on such a beautiful stage. Everyone involved deserves to be congratulated."

Western Harnett Middle School was awarded the Fred Rorrer Trophy for sportsmanship. The trophy honors its namesake, a longtime hunting education instructor with the Commission who died in 2010. Rorrer is remembered for his dedication to conservation and leadership in the youth tournaments. He helped North Carolina teams and individuals to reach the top levels of national competition.

Teams are organized within public and private schools, as well as home-schooled students and teams representing organizations such as 4-H or FFA. More than 3,000 students from 330 schools across the state competed in nine district tournaments held in March. For more information on the tournament and the Hunter Education program, visit newildlife.org.

The winning teams in this year's Hunter Education Tournament were Forbush High School (top) and North Stanly Middle School. In both pictures the teams are flanked by Lt. Mark Rich of Enforcement, left, and Eastern Outreach Manager Chet Clark.

MELISSA MCGAW/NCWRC

MELISSA MCGAW/NCWRC

IN SEASON

In July and August, these seasons are open in North Carolina.

Hatchery Supported Trout Waters: Through Feb. 28, 2017

Crow: Through July 31, Wednesday, Friday and Saturday of each week plus Independence Day

There is no closed season or bag limit for groundhog, striped skunk, nutria and armadillo. There is an open season for taking beaver with firearms or bow and arrow during any other open season for the taking of wild animals.

Check the latest *North Carolina Inland Fishing, Hunting and Trapping Regulations Digest* for bag limits and applicable maps or visit ncwildlife.org.

Commission Biologist Earns Award

Dean Simon, a 32-year veteran of the N.C. Wildlife Resources Commission, was awarded the 2016 Wildlife Conservation Award from the North Carolina Chapter of The Wildlife Society in April.

Simon, a wildlife forester, coordinates and administers wildlife habitat management projects on state-owned lands in western North Carolina. He has been a leader in reintroducing prescribed burning to the southern Appalachians, including multi-agency burning projects with state parks, The Nature Conservancy, the N.C. Division of Forestry and the U.S. Forest Service.

Simon has also recently worked with professors and graduate students from the University of Tennessee to implement an oak savannah restoration study at the Green River Game Lands that includes heavy forest thinning and frequent prescribed burns, with the goal of establishing understory grasses.

"I share this recognition with a lot of folks I've had the privilege and pleasure of working with in the Mountain Region, whose hard work, professionalism and dedication have been a major part of what's been achieved with prescribed fire use for restoration of fire dependent and fire adapted ecosystems, wildlife habitat improvement, forest fuels reduction, and fire effects research in the southern Appalachian Mountain," Simon said.

CALENDAR OF EVENTS

Saturday, July 9

Saluda's 53rd Annual Coon Dog Day, a celebration for dogs and their people, will include great food, live music, parade, crafts, street dance, and more. This homecoming event in downtown Saluda began as a chicken supper fundraiser for the local Coon Club and has grown into an event that attracts over 10,000 people each year. Visit Saluda.com for more information.

July and August

Dove season opens in September to kick off the traditional hunting season in North Carolina. Don't wait until the last minute to take a Hunter Education Course. More than a firearm safety course, instruction includes ethics and responsibility, conservation, wildlife management and more. This 10-hour course is required for all first-time hunting license purchasers. These free classes often fill up quickly, especially as hunting season approaches. To find and register for a course, visit ncwildlife.org/learning.

Readers should check with the contact listed before traveling to an event. Items for listing should be conservation-oriented and should be submitted at least four months in advance to mike.zlotnicki@ncwildlife.org, or call 919-707-0175.

LIFETIME LICENSES

Help conserve wildlife for future generations. In 1981, hunters, anglers and wildlife enthusiasts became shareholders in an innovative investment and conservation program called the North Carolina Wildlife Endowment Fund.

Today, the commission has 19 different lifetime licenses in five categories: Infant, Youth, Adult, Senior and Disabled.

The endowment fund for wildlife was a simple yet revolutionary idea: Create a lifetime inland fishing or hunting license. Put the license fees into a special fund. Spend the accrued interest, not the principal, on programs and projects that benefit fish and wildlife. To learn more or to purchase a lifetime license visit ncwildlife.org/licensing or call 1-888-248-6834.

New Pamlico Boating Access Opens

The North Carolina Wildlife Resources Commission announced the opening of a new boating access area located at 86 Griffin Road in Vandemere in Pamlico County in April.

The Vandemere Boating Access Area provides access to Log Pond Creek, which connects to Bay River, and features two 15-foot wide boat ramps, a 60-foot floating dock, a wooden fixed courtesy dock, a bulkheaded and dredged canal, and an asphalt parking lot. The parking lot includes 32 spaces for vehicles and trailers and 15 spaces for single cars, including three ADA-compliant spaces. The project took about 10 months to complete and also offers mooring for transient boaters with a 48-hour maximum stay.

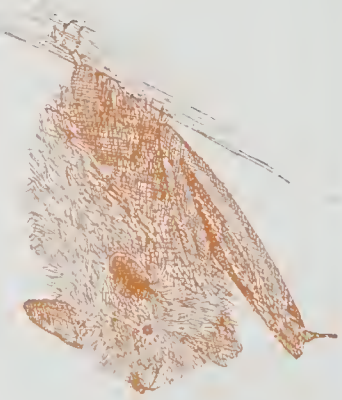
The Wildlife Resources Commission funded construction of the boating access area with motorboat registration receipts and Sport Fish Restoration Program funds. Additionally, the Town of Vandemere renovated existing marina docks through Coastal Area Management Act grants and other sources.

"This new boating access area will give anglers some great fishing opportunities," Wildlife Resources Commission District Fisheries Biologist Benjamin Ricks said. "Boaters can expect to catch a wide variety of species, including redfish, seatrout, flounder, croaker and spot."

Added Sara Sherman, project engineer in the Commission's Engineering Services Division: "It's efficient and functional. It's a cool site for the region and helps make Vandemere a destination. It's so close to the Intracoastal Waterway and fills a geographic need for the Wildlife Commission in that part of the state."

For more information on boating in North Carolina, including locations of more than 200 free, publicly accessible boating access areas, visit the Commission's online locater map on the boating and waterways page at ncwildlife.org.

Bat Awareness



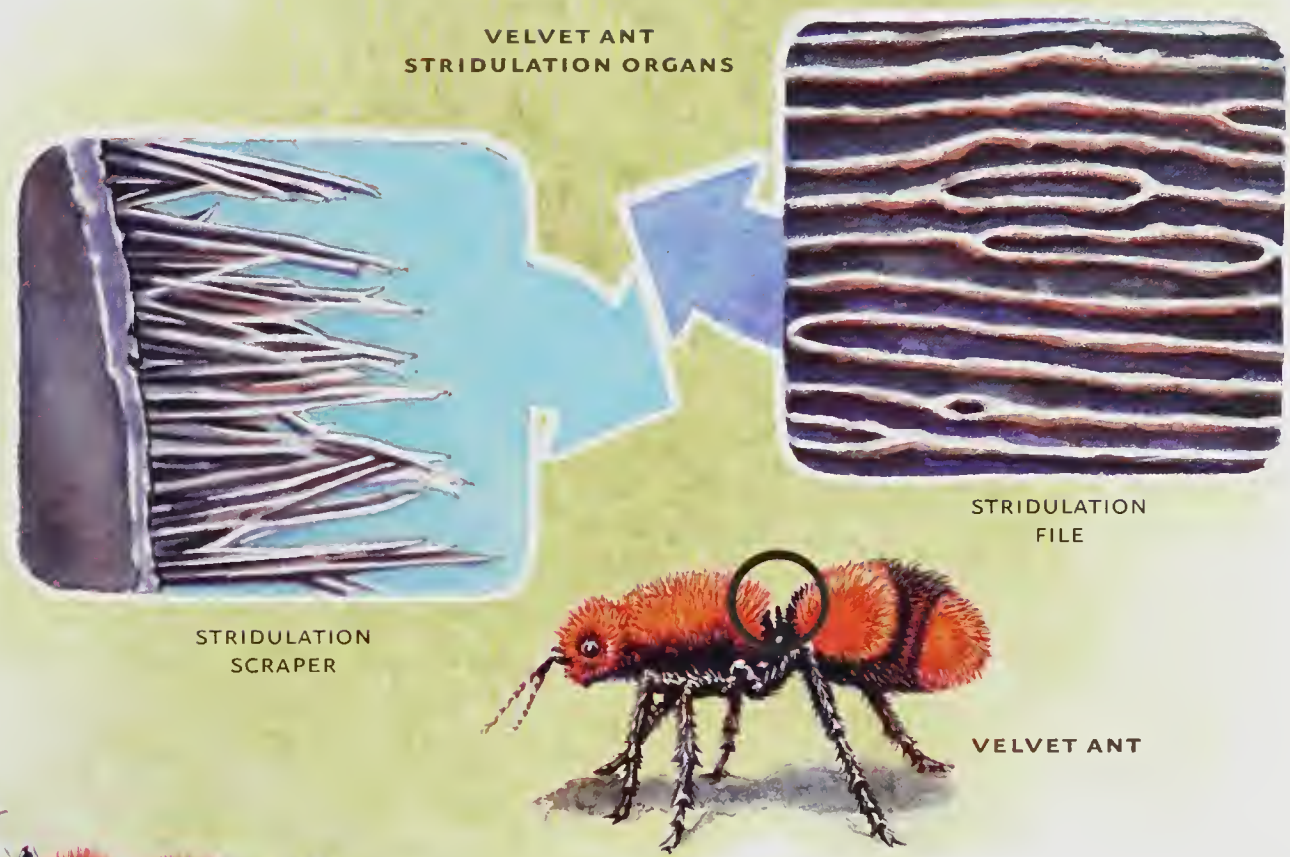
The Wildlife Resources Commission is offering bat-friendly tips to homeowners during pup-raising season. The beginning of May through the end of July marks the time when female bats are raising their young—called pups. Commission biologists urge homeowners to avoid closing up holes or installing eviction devices during this time, because young bats depend on their mother for survival during the first few weeks of life.

"If a homeowner installs an eviction device or covers up the holes that bats have used to get into the house, female bats may not be able to get to their young after a night of feeding, and the young bats would starve to death," said Jessie Birckhead, the Commission's wildlife extension biologist. Different species of bats give birth to live young at different times, so it is important to allow a three-month window for bats to raise their pups even though young bats need just seven weeks to learn to fly. "As long as bats can't get into the living space, homeowners should find that it is best to let the female bat finish rearing its pups before excluding the bats from the building," Birckhead said.

How Do Velvet Wasps Squeak?

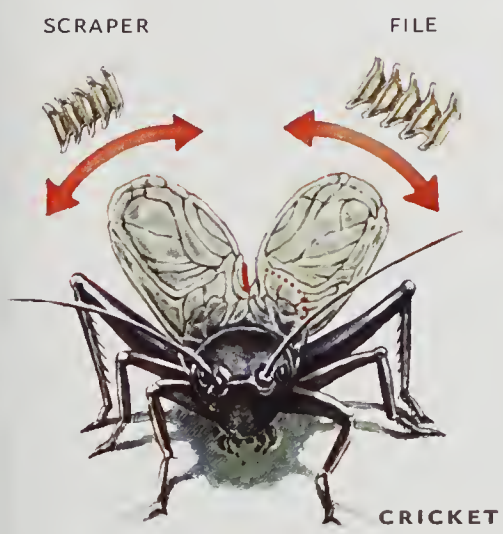
written by Clyde Sorenson
illustrated by Jim Brown

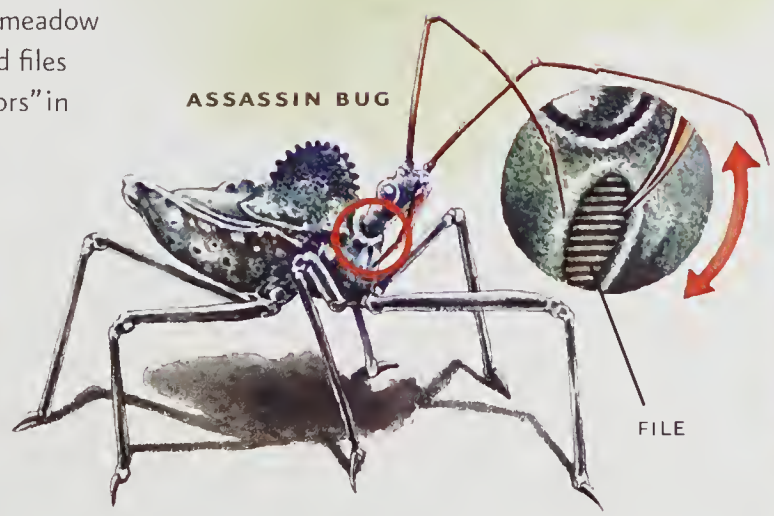
THE LARGE, WINGLESS, SOLITARY CREATURES more commonly referred to as velvet ants because of their unusual appearance, are notorious for their wicked sting (that's personal experience speaking!) and their intriguing color. They are also known for "squeaking" when threatened, a behavior known as distress calling. This behavior is somewhat like the stomping of a skunk —a warning that if the attacker doesn't retreat, it will soon regret it. Velvet wasps (both the wingless females and the winged males) produce their distress calls through a process called stridulation.



Stridulation is actually a series of clicking sounds produced when a scraper is dragged across a file, much as when one drags a pen across the teeth of a comb. The velvet wasps' stridulatory organs are located on the top of the abdomen, on the third and fourth abdominal segments. It calls by flexing one abdominal segment against the other. Several other wasps and many ants also call this way.

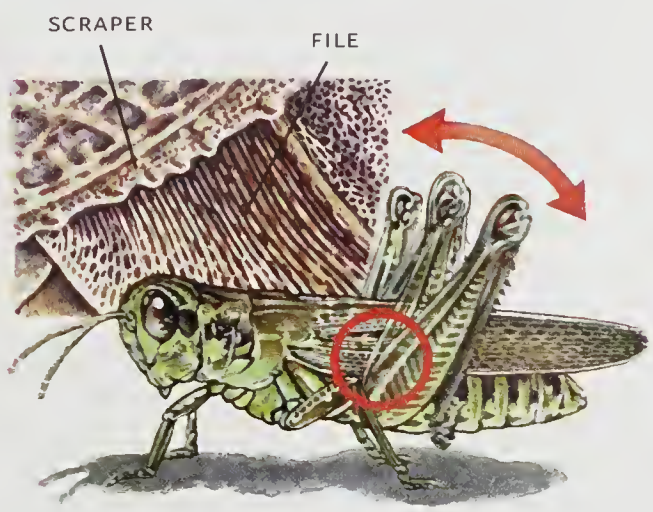
Many other insects stridulate, most famously, crickets and grasshoppers in the order Orthoptera. Crickets, katydids, and the "long-horned" meadow grasshoppers stridulate with scrapers and files located on their wings. Many have "mirrors" in their wings that function as amplifiers.





Many assassin bugs stridulate by dragging the tip of their "beak" across a file located between their front legs. Assassin bugs may call to signal distress, as part of their mating behavior or to signal that they aren't interested in mating.

"Short-horned" grasshoppers call with organs located on their legs and wings or legs and abdomen. Crickets and grasshoppers stridulate primarily to call mates and define territory, and it's the males that do the calling.



The Wedding Drum

written by Jim Dean

Stop me if you've heard this one. Two trout anglers are fishing alongside a road when a hearse passes by followed by cars with their lights on. One of the anglers stops casting and stands respectfully until the procession passes.

"That is one of the most sensitive acts I've ever seen," the second angler says.

JIM DEAN

"Yes, it's the least I could do since we had been married nearly 40 years," replies the first angler.

It's a terribly lame joke that you have no doubt heard in other variations (golfers as often as anglers, for example), and it certainly demonstrates almost literally the "least" anyone could do. Note also that this version does not identify gender (that little detail being an interchangeable choice left to the teller). The real point is to poke exaggerated fun at what so often becomes our overly obsessive pursuit of a hobby. Indeed, for some of us, it might be uncomfortably close to the mark (who me?).

"The real point is to poke exaggerated fun at what so often becomes our overly obsessive pursuit of a hobby. Indeed, for some of us, it might be uncomfortably close to the mark (who me?)."

I was reminded of that tired gag a couple of years ago while friends and I were surf fishing. No hearse passed us on the beach, but the obsessive nature of a certain fisherman was clearly evident. Mary Brady, her daughter Sarah, Sarah's husband George Lamphiear and I had set up our chairs, umbrella, coolers and rods in sand spikes on the beach with the notion that we might catch a few fish for supper.

I cut up some fresh shrimp into small, thumb-sized pieces and we baited the simple two-hook bottom rigs we were using on 10-pound test monofilament with our 7-foot spinning rods. It was early fall, so I thought we might have a shot at some ocean panfish feeding just beyond the shore break. The fishing wasn't great, and we had to put up with the usual bait-stealing pinfish, but we managed to catch enough sea mullet and spots to keep us entertained. I had just walked back up the beach to cut up more shrimp for bait when Mary began shouting.

"I've got something," she cried out. "It's pulling pretty hard. Come here."

"Okay, just a second," I said, thinking it might be a bigger mullet or a nice pompano. I cut up another shrimp, then glanced her way and saw that her rod was bent into a tight arc.

"Probably a stingray," I remarked as I ambled down to join her. Having fished this strcteh of beach for 50 years, I had no reason based on past experience to expect anything much more interesting than that.

"Look at the reel!" she demanded fiercely. Line was pouring off of it. This was no stingray— too fast for that— and I knew that a shark would most likely run straight out to sea. Whatever she had hooked was rapidly heading down the slough.

"Keep your line tight; we're going to have to follow him," I said as we began to walk quickly down the beach. Soon, we were at a half trot, and the fish was still gaining line.

"I'm beginning to think it might be a red drum," I said. "You know, blackened redfish. Pretty nice one, too. It's a little odd because we seldom catch many drum on this stretch of beach."

Two hundred yards farther down the beach, we were managing to keep up without losing more line, and Mary was doing a nice job of keeping the rod tip up and slack out of the line.

Then, she stopped abruptly. "Look!" she cried. "It's a wedding. Tents, tables, chairs, bridesmaids, guys in tuxedos. We can't go down there."

"Oh yes we can," I shouted, my obsession at full boil. "You're not losing this fish. Keep moving."

Another hundred yards farther down the beach, we wound up right in front of the wedding party. Apparently, the ceremony had been over only a few minutes, and while the bride and groom might have left, the rest of the crowd gathered to watch. The fish was tiring, and Mary kept reeling as she began backing up the beach. By now, we could see that it was, indeed, a sizeable drum, but it wasn't quite ready to come ashore. Twice more it tried to surge back through the breakers, then finally rolled weakly in the backwash. I waded in and scooped it up onto the sand.

Everyone cheered as Mary held it up for a photo, then she, Sarah, George and I walked back up the beach toward our chairs and umbrella.

"You know, I feel really bad that we crashed that sweet wedding," Mary said regretfully. "I just don't think it was right, even though that's the biggest fish I've ever caught."

"Well, look at it this way," I said. "Everybody at that wedding will laugh whenever they recall that you landed that fish in the middle of it. Besides, given the statistics, that memory may outlast the . . . "

"Don't even think such a terrible thing," Mary interrupted, giving me a reproachful look. But I noticed the smile she couldn't quite suppress lasted a long, long time.

"Opportunities present themselves every day—to everyone. You just have to be alert and ready to act."

—Marc Ostrofsky

BETH DIGGS

White-breasted nuthatch

OUTDOOR MOMENT

IN THE SEPTEMBER · OCTOBER ISSUE

MELISSA McGAW/NCWRC

TRIBAL TRADITION

A new catch-and-release program along the Oconaluftee and Raven's Fork rivers has helped turn the waters of Cherokee into a fly-fishing destination.

THE PRIZE

Wildlife Resources Commission converts a historic Voice of America property east of Greenville into a 2,882-acre game land to help protect a rare population of Henslow's sparrows.

TURNING MISSES INTO HITS

Even the best deer hunters have room for improvement. A few share lessons they have learned over the years from ones that got away.

TO SUBSCRIBE CALL 1-800-786-2721

OR FIND US ON THE WEB AT ncwildlife.org

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